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Amateur Radio

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APRIL 1999

CQ

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tenna time at K3ANS, Easton, PA

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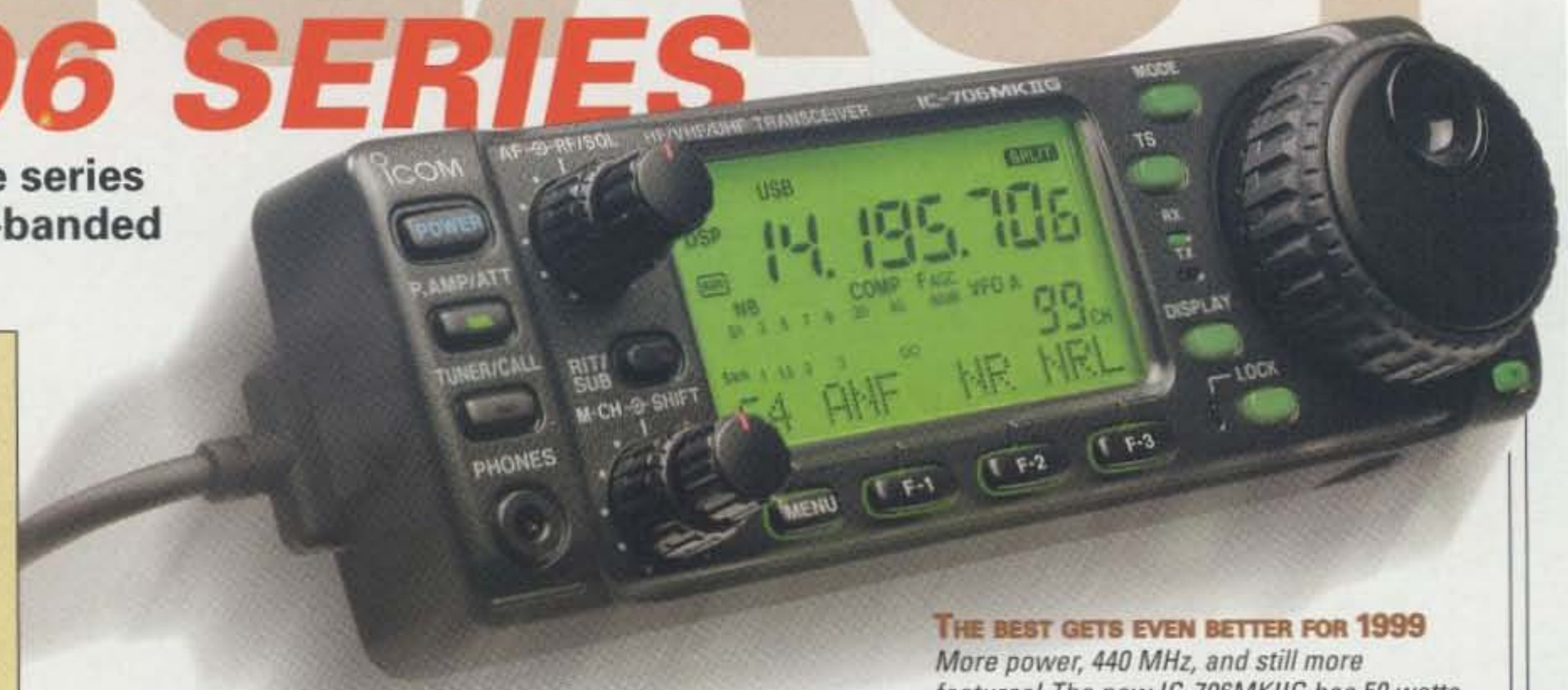
The most versatile series of compact, multi-banded rigs ever made.



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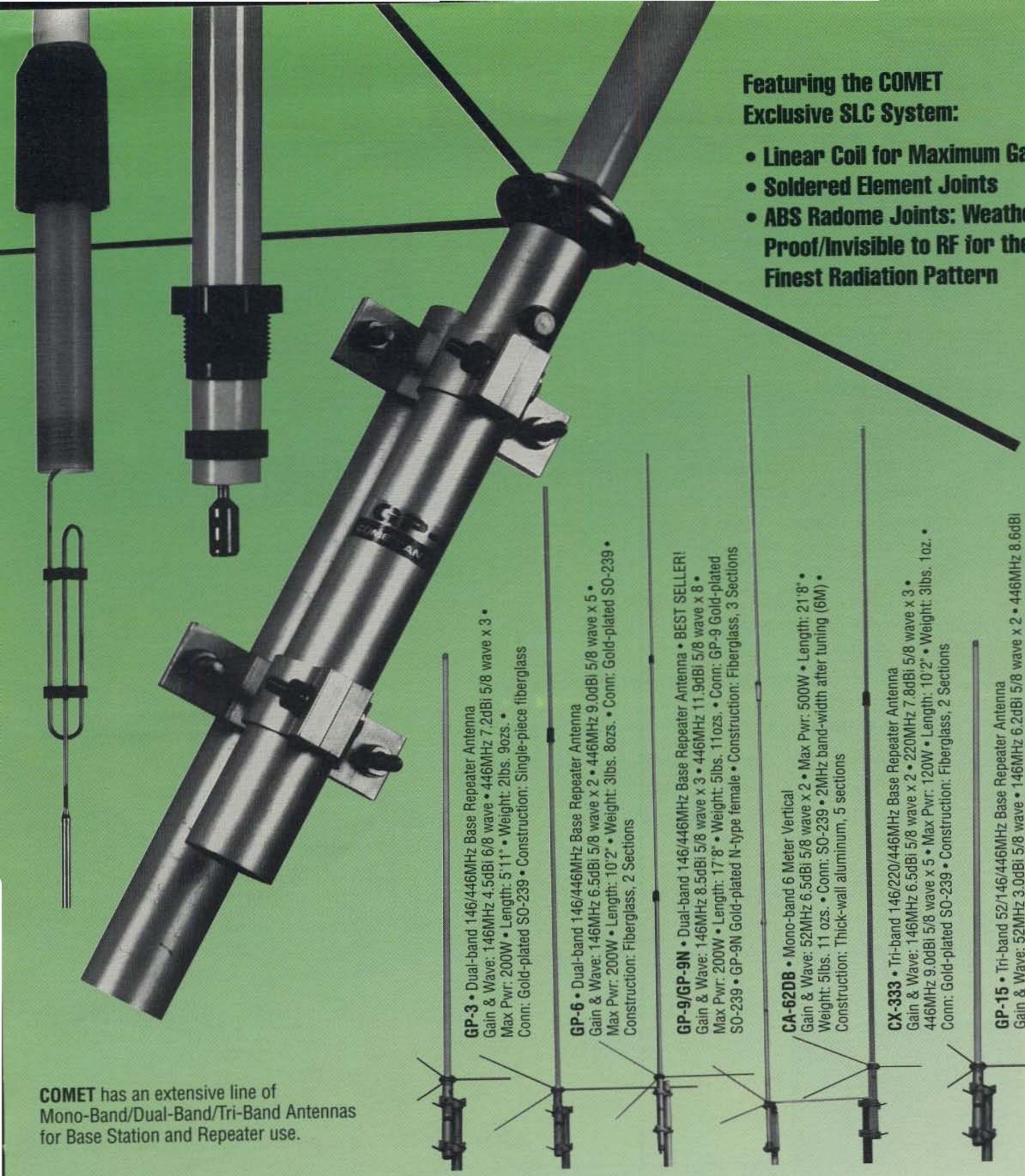

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Conn: Gold-plated SO-239 • Construction: Fiberglass, 2 Sections

GP-15 • Tri-band 52/146/446MHz Base Repeater Antenna
Gain & Wave: 52MHz 3.0dBi 5/8 wave • 146MHz 6.2dBi 5/8 wave x 2 • 446MHz 8.6dBi
5/8 wave x 4 • Max Pwr: 300W • Length: 7'11" • Weight: 3lbs. 1oz. • Conn: Gold-plated
SO-239 • 2MHz band-width after tuning (6M) • Construction: Single-piece fiberglass

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ON THE COVER: No, that's not a tragic disaster scene depicting the ultimate ham calamity. It's Bill Goodman, K3ANS, of Easton, Pennsylvania with his custom designed and built tip-over tower. The 105 ft. Rohn 45 tower is mated at the base with 50 ft. more of Rohn 45 to form an "L" which is hinged to the concrete base at the foot of the 105 ft. tower. Those are the huge "angle braces" which join the two tower pieces into the "L." A winch at the far end of the 50 ft. "leg" is used to tip the entire assembly, complete with its 5-el. 20 meter and 3-el. 40 meter Yagis. Three sets of guys in four directions keep the whole thing safely in the air. (Photo by Larry Mulvehill, WB2ZPI)

Say You Saw It In CQ

Explore the new opportunities of APRS™ with a handheld transceiver built for the future.

TH-D7A DATA COMMUNICATOR 144/440MHz FM Dual Bander

Meet Kenwood's new TH-D7A, an FM dual-band (144MHz/440MHz) handheld transceiver equipped with a TNC and all the features needed for easy amateur radio data communications — and especially APRS.

The TH-D7A offers exciting new adventures in Ham radio with a wide range of data communications options — including simple packet operation using the AX.25 protocol and the Automatic Packet/Position Reporting System (APRS), which is rapidly gaining popularity worldwide. You can also send and receive SSTV images using Kenwood's VC-H1.

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- **Position/directional data**
  Hook up to an NMEA-0183 compatible GPS receiver and you can transmit your exact position for automatic calculation of distance, current speed and heading. Manual input of latitude/longitude is also permitted.
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  Transmit your own alpha messages (up to 45 characters),. bulletins, comments (up to 20 characters), and fixed messages (8 patterns).
- **Station List**
  Store received APRS data in up to 40 memory channels
- **Grid square locator**
- **TX interval** (0.5/1/2/3/5/10/20/30 min.)
- **Packet path selection for Digipeat**
- **Weather station & PHG data reception**

Visual Communicator Control

- **Text superimpose function**
  Add your call sign, RSV reports, comments, etc.
- **VC-H1 shutter**
  Command a connected VC-H1 to initiate transmission
- **Fast FM**
  Send an image in just 14 secs (approx).
- **SSTV transmission mode selection (9 modes)**

- **Dual receive for voice & image transmissions (VHF only)**

FEATURES

■ Built-in 1200/9600bps TNC (1 packet, 1 frame, 256 bytes) compliant with AX.25 protocol ■ Dual receive on same band (VHF only) for both voice and data (two frequencies simultaneously) ■ Large (12 digits X 3 lines) dot-matrix LCD, multi-scroll key, menu mode & other user-friendly features ■ 200 memory channels with 8-character memory name input ■ 16 backlit keys ■ Built-in CTCSS (38 EIA-standard subtone frequencies) ■ 16-digit, 10-channel DTMF memory ■ MIL-STD 810C/D/E water resistance ■ High-gain dual band antenna ■ High-speed (9600bps) PC-based packet communications for chat, BBS, etc. ■ Kenwood Skycommand System (KSS) II for remote control of fixed HF transceiver– TS-570S/D(G) or TS-870S (requires optional PG-4R) ■ Monitoring DX cluster, TM-742A/TM-V7A remote control (DTMF remote), etc.

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ZERO BIAS

AN EDITORIAL

Did you ever meet someone who aspired to being average? You know, someone who really looked forward to working up to being mediocre? I didn't think so. It's not really a goal that most of us strive for or hope to attain. Can you picture looking at an advertisement for clothing and seeing a rather disheveled, grossly overweight model displaying garments that could not be buttoned or that did not fit in any manner and wishing you could look like that? It's not too likely that we'd envision these images for ourselves and think them positive role models for our children.

Amateur radio is about imagination and possibility, two qualities that lift most of us from the mundane cares of the day. I don't think that too many of us became amateurs to add another of life's frustrations or to somehow either amplify or create a profound sense of failure in our lives. At some level we all believed that through this effort our lives would be more enjoyable, and we relished the thought of all the wondrous things we could do. For a lot of us, imagination and possibility have coalesced into something called *fun*. Some of us with a stilted sense of imagination and possibility, however, have experienced the uncertain nature of the hobby with anger, envy, and a rigid wish to keep everything the same.

While most of us don't have shacks that look like the ones featured on our covers or in our amateur radio calendars, they are the stuff dreams are made of. Maybe it's the things we'd like to have some day, or maybe not. Maybe it's something to point us in a different direction or provide a model as to how we can lay out our station in times to come. Maybe it's simply being able to appreciate what someone else has accomplished and in a way enjoy it with him or her. Maybe we'll never have all that stuff either in quality or quantity, but then again, nobody guaranteed it when we started. As with most other things in life, amateur radio is not totally egalitarian.

The core elements to imagination and possibility are uncertainty and surprise—the very things that make a lot of us very nervous. A few days ago, after a particularly full day here at the office and several stops on the way home, I arrived home a bit tired and looking for what John Gray calls "Cave Time." I sat down at the rig and slowly tuned the receiver with my left hand, listening to what amounted to a particularly quiet band. With my right hand I was slowly sorting through that day's mail, trying to pay attention to both activities. Then there it was. Out of the noise and crackling came a small signal. At a moment such as this it doesn't matter what propagation conditions are or should be; they are what they are. I heard the call H40MS and he said "QRZ." I called once or twice and he came back to me. He gave me 5-3 and I gave him 5-5. I then found out his name was Bernhard and how I could QSL him.

It was all over rather quickly. Then I was no longer tired and in fact was rather elated at having worked Temotu Province (wherever the heck that was) and thinking that my last H4 contact was with the Solomon Islands. I'm not that jaded that I accepted the contact as no big deal. It *was* a big deal. For the moment the adrenaline was pumping, and I thoroughly enjoyed the unexpected experience. It's called serendipity. I filled out a QSL card, gathered a few IRCs and a self-addressed envelope, and prepared to mail it all out the next day.

All things being equal, it is possible that as I was checking the mail that evening I had this overwhelming desire to chat with someone, albeit briefly, in Temotu Province. Well, I could have picked up the phone, dialed the country code 677, picked some series of numbers at random, and seen who answered the phone. I could have told the person my name and perhaps he (or she) would have told me his. At some future date my phone bill would reflect and confirm the contact with 677-land and that would be that. I also could have booted up the computer, accessed a provider, and done all the wondrous machinations to chat with someone in 677-land. It's not the same thing, though—not by a long shot.

Okay, so it probably isn't country code 677 and Temotu Province isn't the same thing as the Solomon Islands. Following the oldest of DX adages which simply states "Work it first and worry about the rest later," I went from my 1995 DXCC booklet, which does not have H40, to the new one (November 1998), which does. I picked up the new one at the Miami Hamfest and learned that Temotu Province became a "new country" as of 2359Z 3/31/98. Maybe I should have known it before, but it really was a non-issue until I actually heard it. My excitement over the contact was rekindled when I discovered it was a new country for me. Now I have to get a new amateur radio map at the next hamfest I go to so I can see where it is. None of my trusty amateur radio maps, including my Harrison Radio map, have Temotu Province indicated. There is no doubt at all in my mind that Cass was right when he coined "DX Is."

I don't know about you, but I'd rather hold and look at a QSL from H40MS than have the experience confirmed via a listing on a phone bill. That's the sizzle and that's the attraction. That's also the selling point for the hobby, the point which probably appealed to most of us, regardless of what we actually wound up doing within amateur radio. It was the starting point of our experience. A lot of us found other aspects of amateur radio that we liked better, or perhaps it was simply the circumstances of our license class that precluded such activity.

What about the sizzle when the restructuring occurs? Are we likely to have a giant inrush of new people clamoring to defoliate the HF bands? It's not too likely if past experience is an example. What we do have is a sizeable number of licensed amateurs who will now be able to avail themselves of the HF bands. Will that mean they all will rush in to hither-to-fore sacred territory? Again, it isn't too likely. What it will mean is that a greater number of people who already know about the sizzle and who already have gone the distance to obtain a license will opt to try it out. There could be anywhere from 25,000 to 75,000 people in that group. It also will bring the moribund among us, those who have had a license and thought of letting it lapse or who have become inactive for whatever reason, back to life. And for those who like sinister, nefarious plots, it will give a flagging amateur radio economy a substantial boost. Will this uncomfortable and unasked for restructuring create, as some would think, new amateur industry zillionaires? Well, probably to put our industry in its proper perspective (totally unnoticed in any Forbes listing), this monumental spurt promises to bring to the entire amateur radio industry somewhat less than Microsoft transacts between 9:00 AM on any given day and 9:06 AM on the same day. While it may not be enough to make anyone on Wall Street aware of our industry, it is quite enough to breathe life into many amateur radio companies and possibly encourage a few new people to get involved. It's no great economic secret or theory, but simply put, without a healthy amateur radio industry, there is no amateur radio.

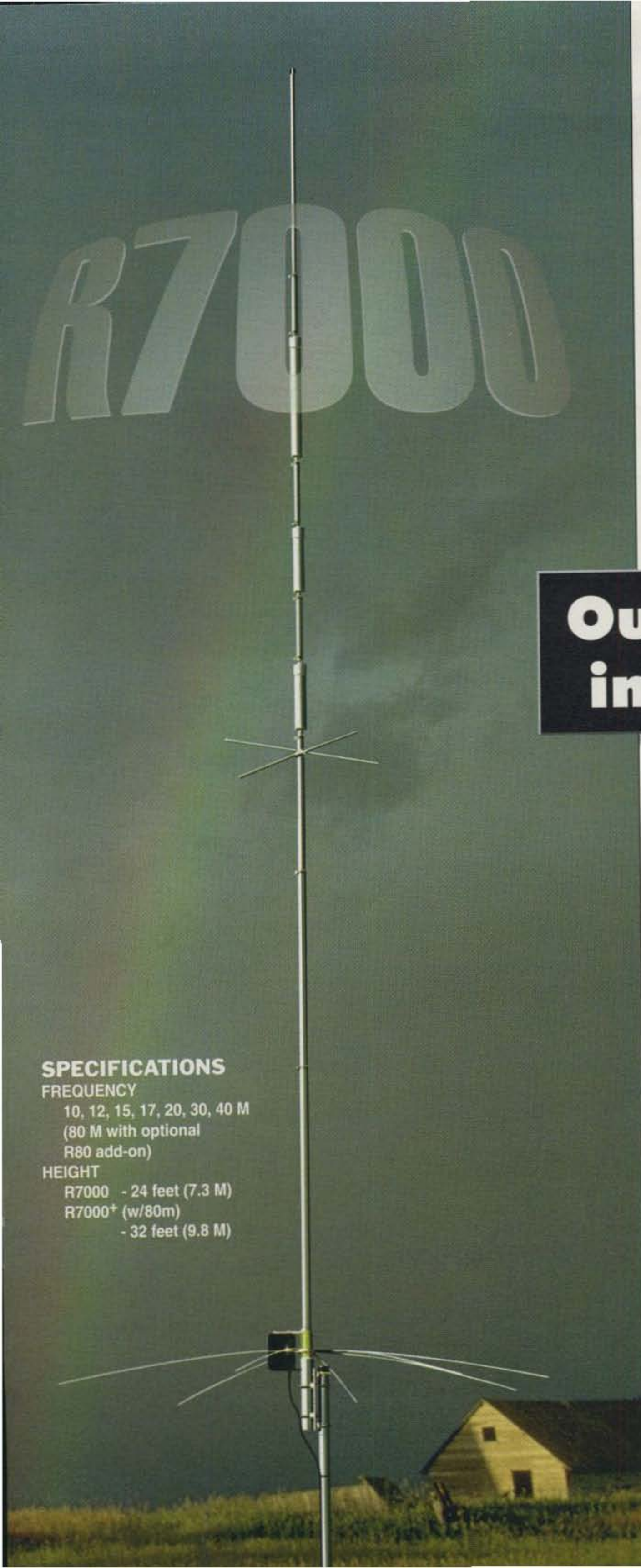
The times ahead are going to be anything but average or mediocre. What will become more important in years ahead are the clubs and stores that sell our equipment. They are the loci for regaining a sense of tribe and community. They are the places where information and lore are exchanged by actual people who build bonds with fellow amateurs and enthusiasts. It's the social part of our hobby, the things that occur when we're out of the house and the rig is shut off, that creates a a lasting effect in keeping our interest in amateur radio alive forever. It's just simple bonding—bonding with our hobby and bonding with our fellow participants. When people around here talk about the good old days of Radio Row and Canal Street, they're really talking about places and people rather than the stuff they bought. It was a real connection between people, a culture, and a heritage that's lasted several decades after these places ceased to exist.

Will any of this slow down either interest or participation in the Internet? Probably not. The Internet, e-mail, web pages, *et al*, are a part of life now, and it doesn't come down to an either/or issue. The computer feeding frenzy is still with us and will be for a long time. The interesting phenomenon, though, is that everyone has accepted the fact of life that the $1500 computer gear of today has to be replaced or tremendously enhanced within six months. There's always more of something needed to do more of something else faster, easier, and to keep up with the crowd. Try to imagine that philosophy and approach readily accepted by the average amateur. Imagine someone telling you that you can do all these wonderful things (pick whatever you like to do) and every year you'll have to get new and bigger stuff. The old stuff will really have little or no value, and it's probably easier just to toss it out. I can see a bunch of amateurs out there (no names) gagging, faces turning red, blood pressure going through the roof simply at the thought of parting with that 20-year-old friend that keeps on working and never breaks down.

After all these years, I still see amateur radio as unique, and I still feel the magic of all these things going on—all without wires. And at those moments when "DX Is," I really don't want to know about Hertzian waves and propagation theory to explain the experience. Basically, it's a hobby about people and friendships wrapped in technology. It's the sizzle that hooks us all, though the meals and appetites are different for each of us.

73, Alan, K2EEK

Say You Saw It In CQ



SPECIFICATIONS

FREQUENCY
10, 12, 15, 17, 20, 30, 40 M
(80 M with optional
R80 add-on)

HEIGHT
R7000 - 24 feet (7.3 M)
R7000+ (w/80m)
- 32 feet (9.8 M)

10, 12, 15, 17, 20, 30, 40 Meters

Outstanding Performance, Reliability, and Looks

The Cushcraft R7000 delivers top performance on seven bands in a package ready for home or portable use. The R7000 offers easy assembly, a small footprint, and a "stealthy" appearance in a manageable size. The R7000 is the best choice for all around HF use.

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Great Performer

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Outstanding in its field!

Slim Silhouette

"I have antenna restrictions, but no complaints from neighbors!" KS4VN

Easy Installation and Tuning

"The use of similar size hardware is appreciated as this minimizes the number of tools I have to carry up the ladder . . . After following the R7000 printed instructions the antenna worked the first time. It has been a pleasant experience to put up a vertical antenna which performs to the manufacturer's specifications." K1NB

Automatic Band Changing

"Seven bands right out of the box with no tuning is impressive." WV0H

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ANNOUNCEMENTS

Doolittle, from Dayton, Ohio; Stu Rockafellow Amateur Radio Society; 1300UTC April 16 to 1600 UTC April 18; on 7.270, 10.116, 14.270, 28.370, 144.215 MHz. For QSL certificates and more info, contact Dave Langston, KB8RAP, 1000 Town Center, Ste. 1200, Southfield, MI 48075.

MRCG Meeting (own callsign followed by "MRCG"), from Camp San Luis Obispo, CA; Military Radio Collectors Group; April 30–May 1; all modes. Vintage and late military operation will be on all bands; late military SSB gear will be on all bands 80–10; AM on 3885 kHz, 7290 kHz, 51.1 and 51.5 MHz; CW on lower frequencies. For more info, contact Hank Brown, W6DJX, Lancaster, CA, 805-943-2027.

Six Club 1999 Sprint, 4th Saturday of April from 2300–0400Z. Each QSO worth 1 point in operator's own country, 2 points for every contact outside own country (Hawaii and Alaska are considered a separate country); multiply total QSO points by number of grids worked; all entries must be received by May 22 by e-mail or snail mail; awards for 1st, 2nd, 3rd, 4th place winners in each country; open to members/non-members. For more info and snail mail address, e-mail <sixclub@6mt.com>.

SX YL to NA YL Contest; YLRL; CW from 1400UTC April 16 to 0200UTC April 18; SSB from 1400UTC April 23 to 0200UTC April 25; YLs only. Send RS(T), QSO no., and section/province/country. W/VE YLs work DX YLs and vice versa. Awards; send logs postmarked within 30 days of contest to Cleo Bracket, KØJFO, 810 Towne Square Dr., Fremont, NE 68025-7000.

K4V, to commemorate 35th anniversary of the Chesapeake Bay Bridge Tunnel; Virginia Beach ARC; 1400Z April 17 to 2000Z April 18; on 28.363, 21.270, 14.270, 7.270, 7.130, 146.55 MHz. For certificate, send a QSL and SASE to VBARC, P.O. Box 62003, Virginia Beach, VA 23462. For more info, contact sunset@exis.net <KN4KL>.

N5D, from Ocean Springs, Mississippi; West Jackson County ARC, to commemorate 300th anniversary of D'Ibervill's Landing in Ocean Springs; 2200UTC April 23 to 2200UTC April 25; on 7.255, 14.255, 21.355, 28.455 MHz. QSL to West Jackson County ARC, P.O. Box 1822, Ocean Springs, MS 59564. For more info, contact Ernest E. Orman, Jr., W5OXA, at 228-392-2816 or at <w5oxa@datasync.com>.

W6LFJ, Santa Rosa, CA; Sonoma County Radio Amateurs, Spring Bud Break event to celebrate commencement of grape growing season; from 1700Z April 17 to 0100Z April 18; on 14.275, 21.350, 28.350 MHz. For QSL, send #10 SASE to SCRA, P.O. Box 116, Santa Rosa, CA 95402.

N7GV, Green Valley ARC; 8th annual commemoration of closing of all Titan 2 Missile sites; from 1800Z April 10 to 2100Z April 11; CW on 14.045, 28.145 MHz, SSB on 7.272, 14.272, 21.373, 28.372 MHz. For certificate, send SASE to GVARC, 601 N. La Canada, Green Valley, AZ 85614. For more info, e-mail <LLOYDCAROLYN@worldnet.att.net>.

N8LC, from Roseville, Michigan; L'Anse Creuse ARC; 1500–2100UTC April 24; voice near 7230 and 14.330 MHz. Certificate available, SQL with SASE to N8LC, c/o Diane Scalzi, 21621 Briarcliff, St. Clair Shores, MI 48082-1299. If you don't want your certificate folded, please include 9 x 12 envelope with $.66; otherwise send business size envelope with $.33 postage.

KI8CJ, from Beavercreek, Ohio; 5th anniversary of Adopt-A-Ham Program; 3:00 p.m. to midnight April 30 and 8:00 a.m. to 3:00 p.m. May 1 (EST); contacts made on 10 meters, 2-meter simplex and 2-meter repeaters; 10-meter station, 28.350–28.375, area repeater frequencies 145.41-, 146.94-, 145.11-, 146.64-, 145.19-, 147.165+, 146.835-, also simplex 146.52. For special event QSL, send SASE to Mike fisher, KI8CJ, Parkwood Elementary School, 1791 Wilene Drive, Dayton, OH 45432.

W8DFG, Utica Shelby Emergency Communications Association; for March of Dimes Walk America; 1100–1700Z April 25; on General portion of 20- and 40-meter bands. QSL or certificate to all verified stations sending SASE to USECA, P.O. Box 1222, Sterling Heights, MI 48311-1222. For more info, visit <www.useca.org>.

W9DK, from aboard WWII submarine *USS Cobia* AGSS-245; Mancorad Radio Club; to celebrate Submarine Memorial Radio Room Reactivation Weekend; 1400–2000Z April 24–25; on ±10 kHz from 7.243, 14.243, and possibly 21.313 and 28.343. For QSL, send QSL and #10 SASE to Fred Neuenfeldt, W6BSF, 4932 S. 10th St., Manitowoc, WI 54220-9121.

WØWYV, Bellevue (NE) ARC; to celebrate 40th anniversary of the club; from 0600UTC April 24 to 0600UTC on April 24 using phone and CW; on 10–160 meters, General class portion for phone (Tech-Plus on 10m) and CW, in Novice portion of 10, 15, 40, and 80 meters, in General portion of other bands; also on 147.39+ FM voice) and 50.125 USB). For QSL, send QSL with contact number and #10 SASE to John A. Sheffield, N4OWG, 6904 Capehart Road, Papillion, NE 68133-2632.

WAØKHF, from Ames, Iowa; Cyclone ARC; for annual VEISHEA celebration; daylight hours April 17; 20 meters phone and CW, talk-in on 147.375+ and 443.375+ (156.7 Hz). For QSL, send SASE to Cyclone ARC, A147 Friley Hall, Ames, IA 50013.

XL3D, celebrating 25th anniversary of the Ontario DX Association; station will take the place of VE3ODX as one of two "10 point" stations in the 3rd Annual Ontario QSO Party, 1800UTC April 24 to 1800UTC April 25. QSL direct with SASE or SAE with sufficient return postage to XL3D, Ontario DX Association, P.O. Box 161, Station A, Willowdale, Ontario M2N

(Continued on page 58)

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Memories of JY1

BY LAURIE MARGOLIS*, G3UML

In the January 1971 issue of CQ we ran a story by Sylvia Margolis entitled "So Who's Looking After the Store?" which humorously documented the events recounted here. The photos in that article show a young man who, because of his amateur radio avocation, became suddenly catapulted, albeit briefly, to national fame for his contacts with JY1. While Laurie's time in the sun because of this incident might have been relatively brief, his comments here speak measures on the phenomenal and lasting impact King Hussein had on all those he came in contact with. The King, a wise and sagacious leader, will be missed by all. —K2EEK

In some ways, 1970 doesn't seem that long ago. Plenty of the things we take for granted already existed. Jet travel was common, with aircraft that wouldn't look all that out of place at modern airports. We had color television, video recorders were starting to appear, and there were push-button phones.

The amateur bands didn't sound that much different either. Single sideband was already the dominant mode. There were plenty of good, small transceivers around, many of them being made by companies such as Yaesu and Kenwood in Japan. I still use an early 1970s Heathkit amplifier. There were contests, pile-ups, split-frequency working, and arguments over DXCC counters.

And yet, in many ways 1970 was a long time ago—29 years ago. Going back yet another 29 years, and the Japanese were planning to bomb Pearl Harbor; the Russians were halting the Nazi tide at Stalingrad; Britain was struggling to survive; and Israel would not exist for seven more years. Much can happen in over a quarter of a century.

More to the point, satellite communication, the Internet, and cellular phones were still a long way off. International communications by telephone were expensive, unreliable, and often collapsed in the face of natural or man-made disaster. And the Middle East was exactly mid-way between two devastating wars—the Six-Day War of 1967 and the Yom Kippur War of 1973.

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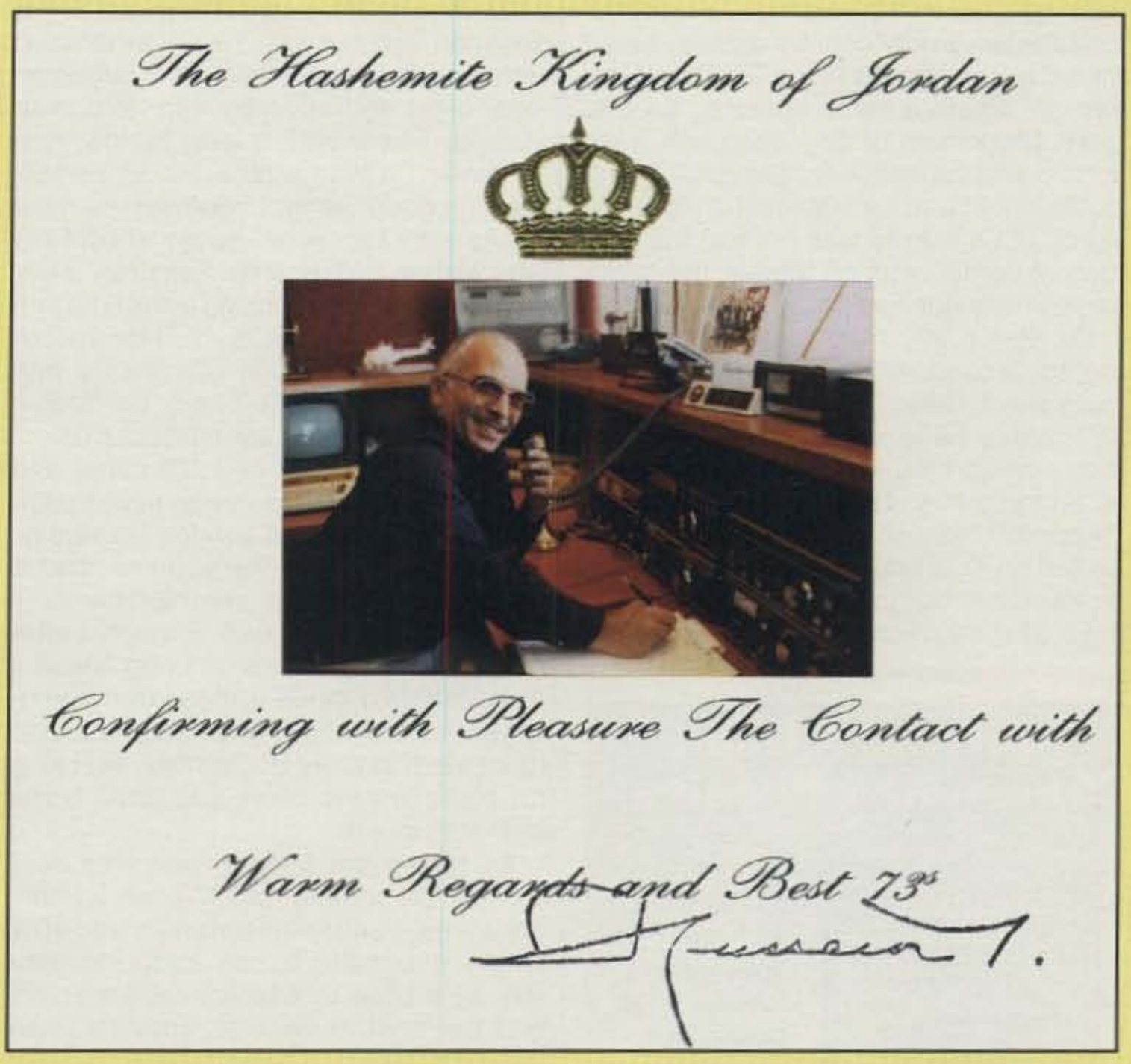

A royal QSL confirmation one of the world's most famous statesmen and amateur radio operators, King Hussein, JY1.

King Hussein of Jordan died in February, and was buried amidst possibly the greatest collection of world leaders ever gathered in one place: Britain's Tony Blair with France's President Chirac; Iraqis and Israelis in close proximity; President Assad of Syria; and President Yeltsin of Russia. I don't know why, but I found the shot of four US Presidents — Carter, Ford, Bush, and Clinton—breathtaking, the distillation of a mass of democratic decision-making all in one place. All for the Hashemite King of Jordan, King Hussein Ibn Talal. All for a radio amateur, JY1.

Truly great people—US presidents, British monarchs, world leaders—touch many lives, but usually on formal occasions and at a distance. I was just feet from Bill Clinton as he worked the crowds in Northern Ireland. The people who shook his hand, or even stood next to someone who shook his hand, will never forget it—contact with power and success. The difference with King Hussein, a genuinely, truly great man, was that he chatted with many of us radio amateurs, in our homes, through the familiar medium of our radio stations, one on one, as equals. We were G-something or W-someone. He was JY1, another SSB signal in the 20 meter QRM.

A Special Contact

My bit part in this story begins back in March 1970. I was a 19-year-old student,

a Jewish student, living with my family in the resolutely ordinary suburb of Ilford in Essex, east of London. Essex's relationship with London equates roughly with New Jersey's with New York City, with all the glamour and style that comparison implies. My father was Maurice, G3NMR; my mother was the well-known *CQ* contributor of the time, Sylvia Margolis. I'd held my amateur license for almost five years at the time.

Word had gone around the amateur radio world that King Hussein of Jordan, as unlikely as it sounds, had become a radio amateur with the callsign JY1. At that time Jordan, a poor country recently hammered by the Israelis in the Six-Day War, had no amateur radio stations, so the mere suggestion of any operation from Jordan was cause for excitement. I seem to remember that my first reaction to hearing of JY1's activity was not just that the King of Jordan was on the air, but that I might finally get Jordan for a new one.

On March 20, 1970 I was tuning 20 meters, around 14280, higher than I'd normally listen. I heard a familiar voice. It was JY1, with a huge signal, finishing a contact. I called him, wondering mainly how to address him. He gave his name as "Hussein"; this seemed a bit familiar, so I settled on Your Majesty, pretty odd on the egalitarian amateur airwaves, but I hoped it wouldn't cause offense.

We had a routine contact: weather, rig, 73's. The King of Jordan—and this really took some accepting—was blasting out of my loudspeaker in my living room, calling me Laurie, and telling me he was using a Drake T4/R4 and an L4B amplifier. My father, G3NMR, made a contact immediately afterwards. The King seemed pleased to have worked the father/son combination. No doubt it appealed to the hereditary sensitivities of a monarch.

King Hussein's QSL address was workaday: P.O. Box 1055, Amman. I sent one off immediately, of course, and only a few days later his card dropped onto the doormat. It came in a heavy embossed envelope, resplendent with the Jordanian royal crest and covered with Jordanian stamps. There was a long handwritten message: "It was a pleasure to contact you, my good friend. I hope we will have a future contact soon. Kindly accept my best wishes and regards, Sincerely, Hussein I." I remember thinking at the time that if he made many QSOs, he'd be spending a long time writing QSL cards with messages that length. I think he discovered QSL managers soon afterwards.

Well, the summer of 1970 came and went. As far as I was concerned, I completed my first year at London University, went to America for the summer, had a disastrous time at a summer camp in Pennsylvania, then had a much better time working in a store on Long Island. I discovered I'd made a mess of my end-of-year examinations and had to return to re-sit them in early September, wrecking my plans to travel more and come home later that month.

As far as the Middle East was concerned, the summer of 1970 was an ominous time. Palestinian terrorism was at its height, attempting to use Jordanian territory as a base to attack Israeli interests and the west in general. They hijacked three airliners to a remote desert airstrip called Dawson's Field, in Jordan, and blew them up in front of TV cameras. King Hussein realized there was a serious danger that his poor desert domain would be taken over by the Palestinians, and there wouldn't be much resistance from the rest of the Arab world. The very legitimacy of Jordan was questioned by many, who saw it as an artificial state created largely by the British after World War I.

King Hussein decided to fight the Palestinians, to smash the PLO strongholds in his kingdom. The Jordanian civil war developed rapidly and by September 1970 it was raging.

Again, I point out that in 1970 it was inevitable that international communications would collapse under such circumstances. Jordan was no exception. It became a media dead spot. There were no satellited reports. In those days TV film (portable video was still some way off) had to be flown from the scene of a story to someplace where it could be edited and processed, and then flown back to broadcasters such as the BBC or NBC.

Looking at yellowing newspaper cuttings from that time, the press datelines were Nicosia and Beirut. Virtually nothing was coming directly out of Jordan, by now the scene of vicious fighting as King Hussein tried to re-impose control.

There was one voice, however, emerging from Jordan, from the very heart of the kingdom. A few days after I returned from America, I was listening across 20 meters late one night. There, to my considerable surprise, was JY1, King Hussein, chatting to a WØ in Minnesota. Conditions were good; he was loud and I called. To my surprise he remembered our contact six months earlier and described the desperate situation in Amman and his hopes for the way it would turn out.

I have been with the BBC for 24 years now, but at that time I was still some way from becoming a journalist. Indeed, without passing some exams I was some way from being anything at all. But even my still undeveloped news sense recognized that this seemed pretty unusual. There was a country, war-torn and completely cut off, and there was the Arab King giving me, by now a 20-year-old Jewish student, an eye-witness account—the only eyewitness account—of what was going on. All this on 20 meter sideband.

As well as being a writer for *CQ*, my mother, Sylvia, had become a well-known radio personality in Britain. By now it was about 1 AM, but I woke her and asked if she found this interesting. She did, and rang the "Today" program, then and now the major morning current affairs program on BBC Radio. They were excited by the story and sent around a radio links vehicle the next morning to play my tape of the contact with JY1 and to interview me.

Then began two weeks of mayhem. It is no exaggeration at all to say the world's media descended on our small house in Ilford. I had several more QSOs with King Hussein over the next week, passing on various messages to his family in England and to the Jordanian embassy. There were often several reporters listening (the King always knew this), and the story was big in the British papers, as well as overseas. The King appeared obligingly, S9 plus as usual, as a BBC TV news program did a live report from the house. The story had two strong elements: The only eyewitness accounts from Jordan were coming through its king, and that information was being picked up by a young student in a London suburb. It was a good story. My exam revision wasn't getting far, but I had to admit this was fun.

Then King Hussein, doubtless with better things to do than chatter on 14225, failed to appear for a few days, and my

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side of the story began to fade. There was still very little coming out of Jordan.

One evening the main BBC TV early-evening news show came to shoot some background material. The King hadn't been heard for a week. The TV team had been working all day and was clearly unenthusiastic about what they saw as an old story. I hadn't heard the King for days and felt we were, in the Cockney vernacular, "flogging a dead horse."

The TV team set up and asked me to make a demonstration contact with anyone. I talked to someone in Lithuania. Then, blasting through the early evening QRM, was JY1, crystal clear: "Good evening, my friend Laurie. This is Juliet Yankee One." It was a startling moment. The TV people loved it, I was pretty stunned, and it made several minutes on the following night's program. I don't think the King revealed anything very much, but he was still the man of the moment, and information from Jordan was very limited.

The war ended with the King victorious, at the cost of a destroyed nation, and Palestinian discontent even deeper than it had been before. The Black September terrorist movement grew out of those days. Some weeks later, a package turned up from the Jordanian embassy. Inside were two watches, engraved with the royal crest, one for me and one for my father. I've worn mine virtually every day since. A note from the embassy thanked us for our help and support.

Later that year the King, exhausted from running the war, spent some time in a hospital in London. To our great delight, he put a beam on the roof and used his reciprocal call, G5ATM. My father and I were invited to meet him. It was just the three of us in a modest hospital room in central London, the small figure of the King lying on his bed in his pajamas and robe. I really can't remember much of the half-hour conversation. I was just astonished to be there. But I do remember looking at the King's bookshelf, with lots of wartime novels and books about the RAF.

This story has two postscripts. The following summer I was in Israel, operating a contest from Kibbutz Sasa, at that time a very active station on a mountaintop in the north of the country. This was years before peace treaties, the Sadat visit to Jerusalem, or any crack in the glacial relations between Israel and the Arab world. I was using a 4Z4 callsign, so there was no mistaking where I was. On the Sunday afternoon, as I worked through a pile of Europeans, suddenly a very loud signal boomed out of the loudspeaker: "Hallo, my friend Laurie. How are you?" Who was that, I asked. "Your very good friend to the east," the familiar deep voice replied. It was the King again, this time talking to me in Israel. The Israelis listening nearby were thunderstruck.

I never met King Hussein again. However, during the first Gulf War, when I was a BBC correspondent in Jordan, I conducted a long interview with Queen Noor, originally the American Lisa Halaby. There was much anti-American feeling in Jordan, and King Hussein had backed Iraq's Saddam Hussein for good internal reasons. I was intrigued by her role as a highly visible American in Jordan. As luck would have it, after I'd been negotiating for the interview for weeks, the summons to the palace came as I was in my hotel bed with flu. I wasn't at my best, but she looked stunning and was very friendly and straightforward.

King Hussein maintained his interest in amateur radio for many years, running top-quality stations from his palaces in Amman and Aqaba. He talked to friends all over the world, including very many in the United States, none of whom will forget the day the King came to call. ■

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A **serial port** is provided with firmware drivers to communicate with a Personal Computer for purposes of controlling the CIA-HF and for downloading data and graphs to a PC for future reference. Possible applications include but are not limited to **tuning: antennas or RF resonate circuits, feedline stubs, RF filters, MRI** circuits, **baluns and matching networks**. Use an external loop on the end of a short piece of coax to make the CIA-HF operate like a stable and backlash-free **grid dip oscillator** with a graphical display of the relative Q factor. A beeping tone gives **audible feedback of SWR** at a single frequency for hands-free tuning of an antenna or resonate circuit without even having to look at the CIA-HF.

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Huge antenna systems such as this one boggle the minds of most of us. Some of us will be emerald green with envy, and a few will be angry at the apparent (to them) opulence. Most of us, however, will rejoice in the fact that making dreams come true is still quite possible and certainly worth doing.

A Super Antenna System
28 Elements on 75 Meters

BY MIKE LAMB*, N7ML

In my early Novice days in 1958, I remember listening to a fellow amateur, "Johnny," who lived on a 1400 foot hill outside my town of Longview, Washington. Johnny had a massive Sterba Curtain array for 15 meters and would ragchew with Europeans on 15 meters AM, giving them 59 reports. I had a Hallicrafters S-38D receiver and a 75 foot "long-wire" antenna. I remember putting my ear right on top of the receiver speaker and turning the volume control wide open. I could not even hear a whisper of the stations with whom Johnny was ragchewing.

Even though over 40 years have passed, I can remember thinking to myself that someday I really wanted to have a station and antenna "like Johnny." I had all but forgotten about that "commitment" until about four years ago, when I erected my two 190 foot rotating towers with six stacked triband Yagis and three stacked 40 meter 3-element monobanders. One day when I was working a big pile-up of Europeans on 20 meters, I was thinking about just how much fun I was having and had this flashback to the days of listening to Johnny doing this many years ago. It was then I realized that I had set a sub-conscious goal for myself that had long since been forgotten but finally was being met!

After playing with the higher frequency bands and enjoying the pile-ups the six-triband stacked array (see October 1995 *QST*) created, I decided to try the 75 meter band, where DXing is dominated by a relatively few Big Guns out here in the western states. My first attempt was a four-element Lazy-Vee array which is electrically similar to a four-square vertical array. That antenna did very well for me, but I was still not competitive with the top tier out on the West Coast.

*11181 Pine Butte Road, Bozeman, MT 59718

Enter The Computer

In the spring of 1997 I purchased Brian Beezley's AO antenna modeling program. I spent a couple months trying every configuration of wire antenna I could think of that fit on my existing towers and property. I tried inverted-Vee Yagis, more vertical dipoles, vee beams, bi-squares, etc. One of the problems with computer modeling programs is that you never seem to settle on the perfect design for your real-world restrictions.

Finally, during the summer of 1997 a 5-element quad array (two 3-element quads with a common reflector) was erected from a catenary rope strung between the 180 foot points of my two 190 foot towers. I literally spent most of my spare time over a two month period trying to tune the quads for maximum front-to-back rejection. That antenna did a very good job, but the noise level was very high and I was still not competitive with the fellows having the new well-tuned, inductively loaded 3-element Yagis on the West Coast.

Introducing WA2WVL

After putting up my quad array, I started working the VK's and ZL's in the 75 meter DX window with good results. Although I was getting respectable reports, several of them told me of Floyd, WA2WVL's superior signal out in New York State with his monster nine-element array described in the *ARRL Antenna Compendium #4.* His signal was even stronger than the Big Gun signals on the West Coast! Floyd used a single catanary like I already had installed between my two towers with diamond loops for reflectors and switchable driven elements.

Impedance curve for European 14-element array displayed by the AEA CIA-HF Complex Impedance Analyzer and Amidon 1.5 to 1 unun transformer for matching directly to 75 ohm hardline.

Say You Saw It In CQ

Back To The Computer

Having more experience with the computer modeling program, I decided to go back and try it again. This time I used the shift and rotate commands, which allowed me to more accurately model sloping wires. After several weeks of trying everything I could think of, I finally settled on using the same catenary I used for the quad array, but for supporting two 7- element wire Yagis that were placed side by side and sloping away from the catanary (see fig. 1).

N7UA and K6UA each use a six-element Yagi composed of two side-by-side 3-element Yagis, horizontal over ground. Both Dale and Bob are at the top of the pecking order on 75 meters with their arrays. If I had four towers, I could have had both Yagis parallel to ground and that would have added about 2 or 3 dB of additional gain. However, sloping wires was the best I could do.

After spending an additional week optimizing the double Yagi design, I wound up with about 15 dBi gain over ground at an angle of 20 degrees and a front-to-back ratio in excess of 30 dB according to the computer. This is about 3 dB better than the quad array according to the computer. However, I don't think that the quad array was properly tuned, and therefore I suspect I may have over 5 dB of actual gain over the old quad array. Because of a high power-line noise problem, I chose to optimize the front-to-back performance at the expense of about 0.5 dB less than maximum gain.

The new 14-element Yagi array design calls for feeding the two driven elements from the ends where they come together at the center catenary. The drive impedance is very high—about 12,500 ohms. Thanks to suggestions from K6UA and N7UA, I decided to feed the driven elements with open-wire feedline that I made using 14-gauge copper wire and Delrin 1/4 inch rod stock. Utilizing a new prototype product from AEA called the CIA-HF complex Impedance Analyzer, I tuned a 3/4 wavelength piece of open wire feeder for 3.795 MHz. By placing a short at the opposite end of the feedline from the antenna feedpoint, I reflected a high (close to infinite impedance) back to the antenna.

At the ground level I have a 550 foot length of 70 ohm hard-line going back to the operating shack from a remote antenna switch. Various lengths of RG-11 coax from the antenna switch feed each of my 75 meter antennas. In order to match the 70 ohm coax to the open-wire feeder, I again used the CIA-HF to find the 70 ohm point on the open-wire feedline by tapping up from the short toward the antenna. In order to utilize the 50 ohm CIA-HF, I used a new Amidon 1.5:1 unun which converts 70 ohms to 50 ohms and placed it directly between the open-wire feeder and the

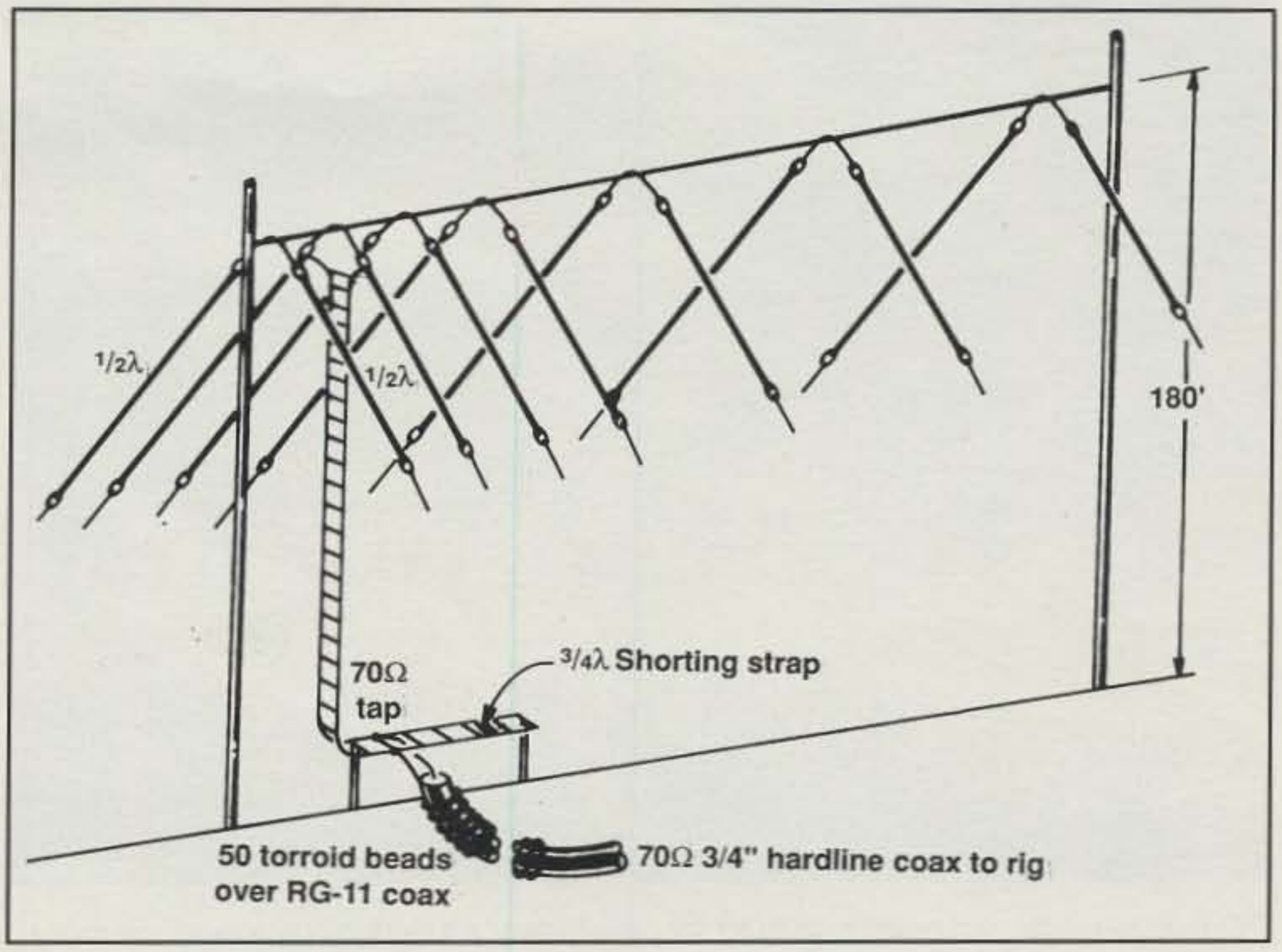


Fig. 1– The 14-element wire Yagi array for 75 meters (composed of two 7-element Yagis, side by side).

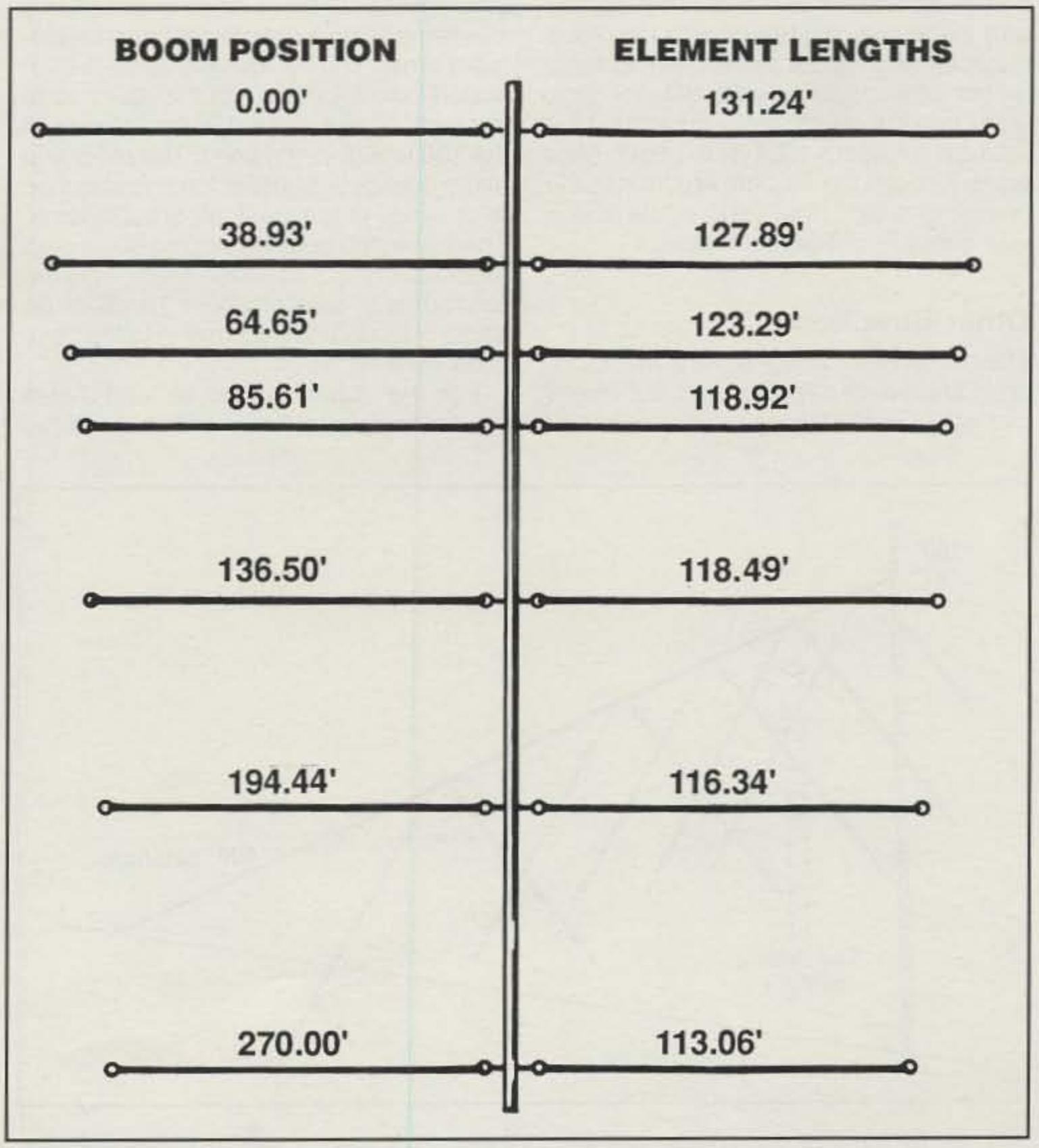
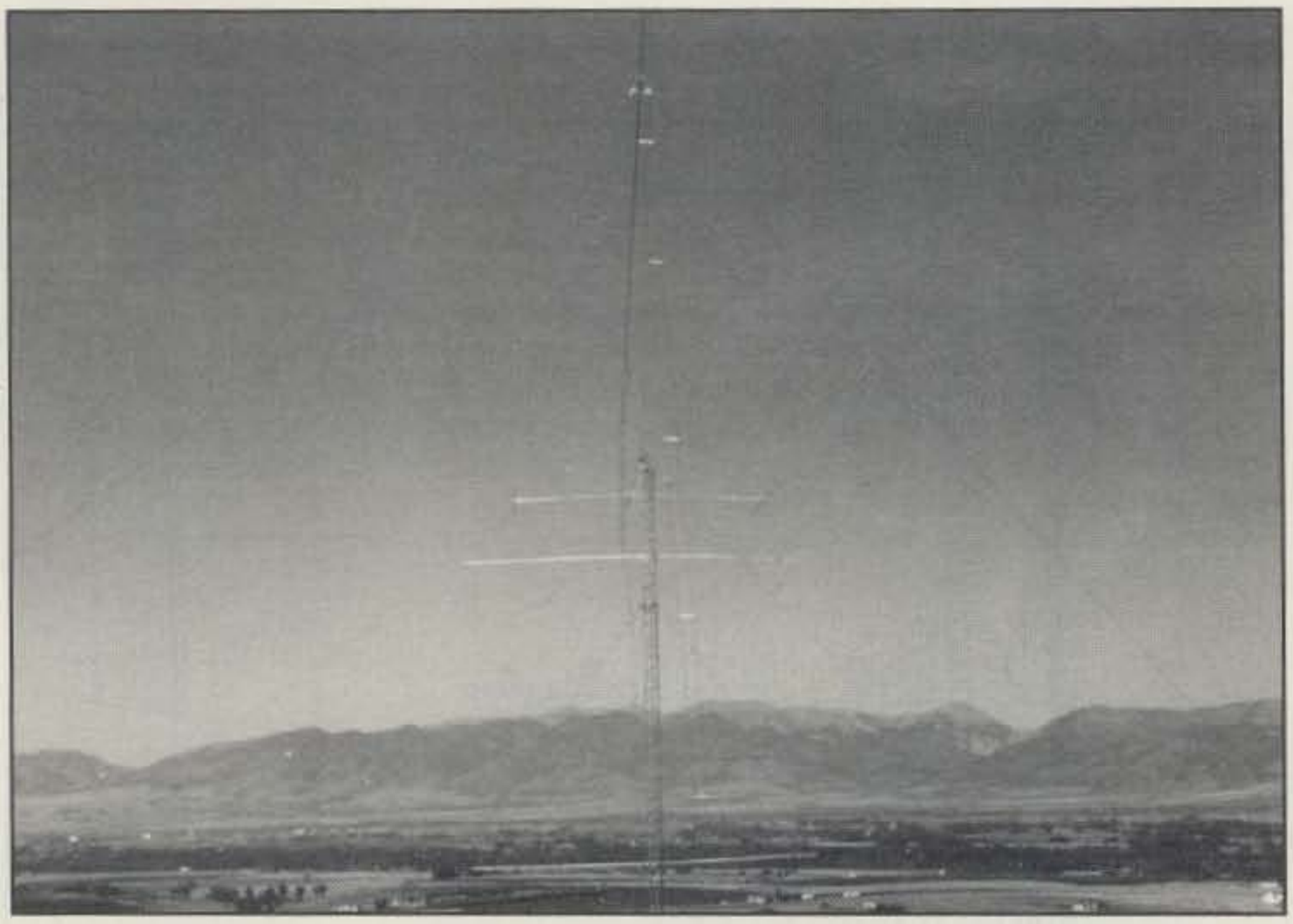


Fig. 2– Element lengths and boom positions for the 14-element array.



Driven element and open-wire feed for 14-element array (looking toward Europe).

CIA-HF. Using the CIA-HF, I simply used a coax connector with two short copper wire leads and alligator clips to tap along the open-wire feeder and a shorting strap farther down the line with alligator clips until I had the lowest SWR possible. I set the taps for about 1.2:1 in the field. After going through the 70 ohm feedline to the operating shack, the SWR in the shack was about 1.05:1 at resonance.

Other Directions

The 14-element array covers the European short-path direction well, but I need two other antennas to cover the other parts of the compass. For the European long-path direction, I have assembled a 10-element array similar to the 14-element array. The 10-element array is supported from a catenary that is attached to the back of one of the 190 foot towers at the 180 foot guy-ring point. The other end of the catenary (600 feet long) is attached to a steel fence post at ground level. Therefore, the boom is sloping downward at about a 12 or 15 degree angle. This antenna has a gain of about 13 dB at an angle of 24 degrees according to the computer (see fig. 4).

For the South American and Asian directions, I use a 4-element Lazy H array with the upper elements at 195 feet supported from masts coming out of the tops of the two towers. The lower elements are supported at the 60 foot level. This antenna gives about 12 dB gain at 14 degrees elevation according to the computer. My towers are on a ridge that falls away about 200 feet at a distance of about four wavelengths. Plugging this into the computer gives a gain of about 13 dBi at a wave angle of 8 degrees. The Lazy H is bi-directional and therefore has a much higher noise level than the Yagi arrays, but it sure transmits well.

In order to cover all points of the compass, I am using 28 elements. If I phased them all together, do you suppose I could have a good omni-directional radiator?

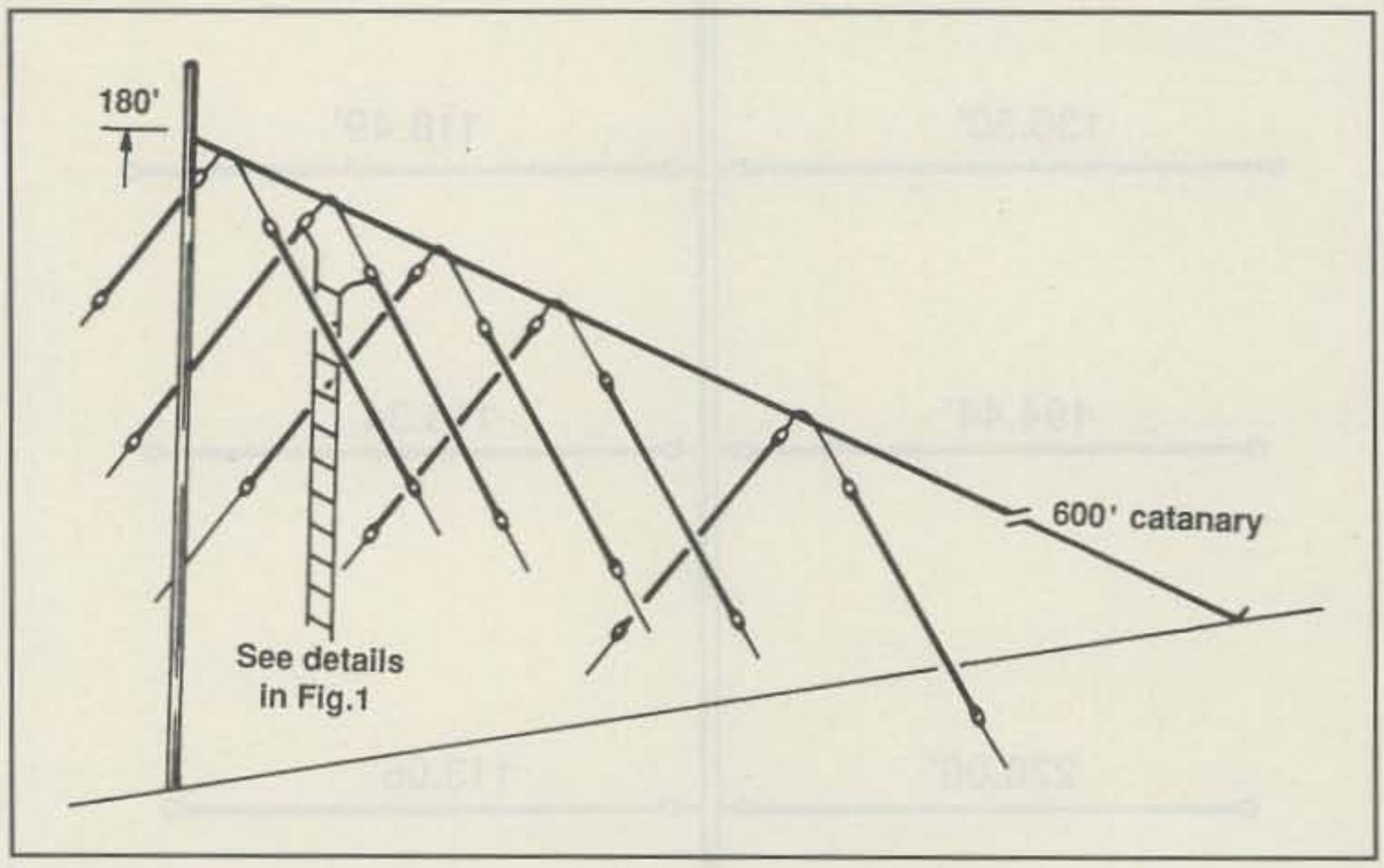


Fig. 3– Pictorial of the 10-element sloping wire Yagi (composed of two 5-element Yagis side by side).

CW Band

The two Yagi arrays are very narrow banded (about 45 kHz between 2:1 SWR points) because of their massive size. Because the activity level on 75 SSB is so much greater than 80 meter CW, I chose to design the antennas for 75. Checking with the computer, it was noted that if I tuned the 14-element array to the bottom of the 80 meter CW band, I had a bi-directional pattern with slightly more (about 0.6 dB) gain off the back. The forward gain is about 9.8 dBi over ground at about 24 degrees elevation angle. The advantage is that I can cover both long and short path to Europe with one antenna. The disadvantage is that the noise level on receive is much higher than when the antenna is tuned for the SSB band. To accommodate tuning the 14-element array to the CW band, I replaced the SSB short on the open-wire feeder with an SO-239 connector that will accept a shorted PL-259. Then I placed another short farther down the open-wire feeder away from the antenna. I tapped up from the short toward the antenna for a 70 ohm point.

To go from CW to phone, I simply go out into the antenna pasture and move the coax from the CW tap to the SSB tap and plug the shorting PL-259 into the SSB shorting position. I leave the shorting PL-259 tied with a short rope to the open-wire feeder so that it is never lost. The shorting strap for the CW position is soldered in place because it does not affect the SSB tuning beyond the SSB shorting plug.

Results

Upon putting the antenna on the air, I found that winter conditions on 75 had deteriorated significantly. However, when I found European signals they gave me excellent reports relative to other Midwest and West Coast stations. When comparing receive signals to a single vertical dipole, I could see about 18 dB of improvement with the 14-element array. The old 5-element quad array usually gave me

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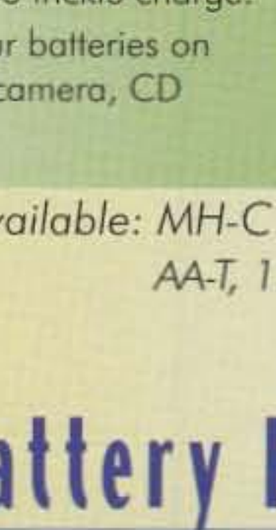

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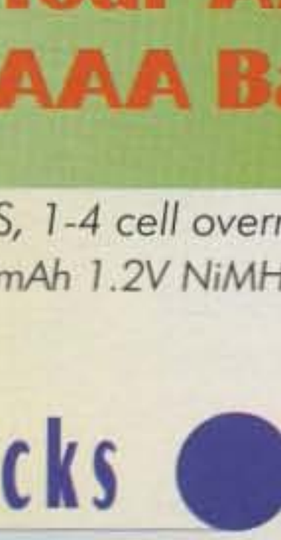

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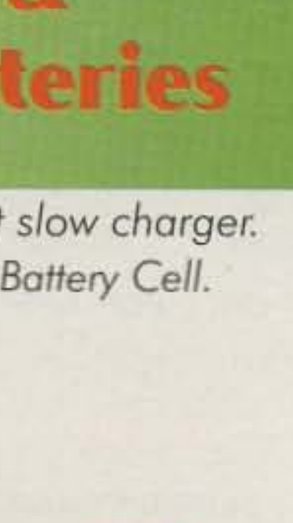

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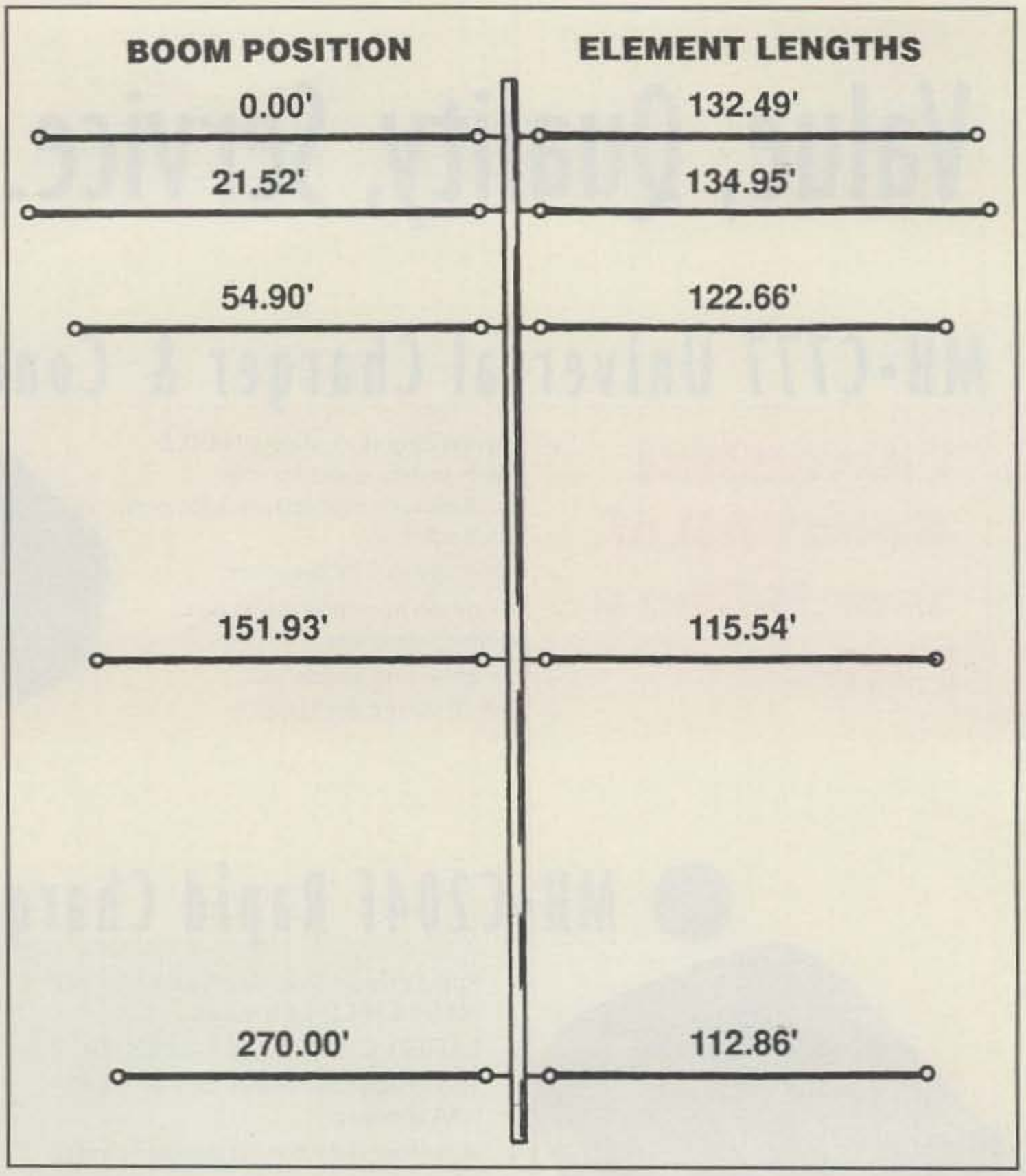
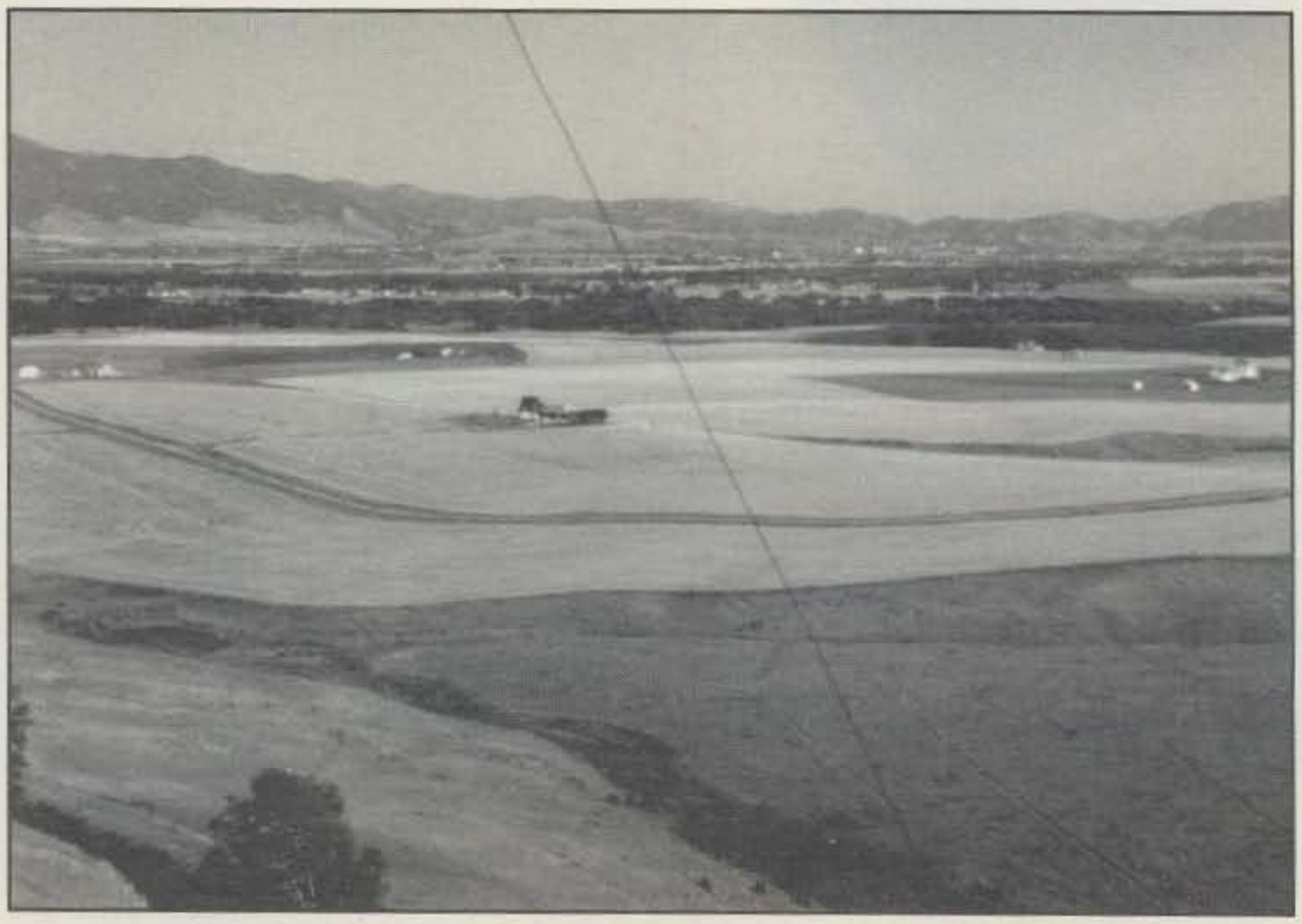


Fig. 4– Element lengths and boom positions for the 10-element wire array.



View toward Africa from the top of the Lazy H. The valley floor drops 400 feet from the base of the 190 foot towers.

only about 10 or 12 dB of improvement over the dipole. Perhaps the biggest improvement I have noticed so far is that the noise level on the 14-element array is about two to three S-units lower than with the old quad array. That has made a big difference in my ability to hear the weak signals out of Europe, but it has also made it much more difficult to be heard by the stronger stations when conditions are poor (I hear them with a much better signal to noise ratio, but I have only improved my transmit signal by less than half as much.).

Recent reports on the band during the very beginning of the season are netting me signal reports that are as big as any I received at the very peak of the season last year. This is a very good indication that things are indeed working as well as the computer would suggest.

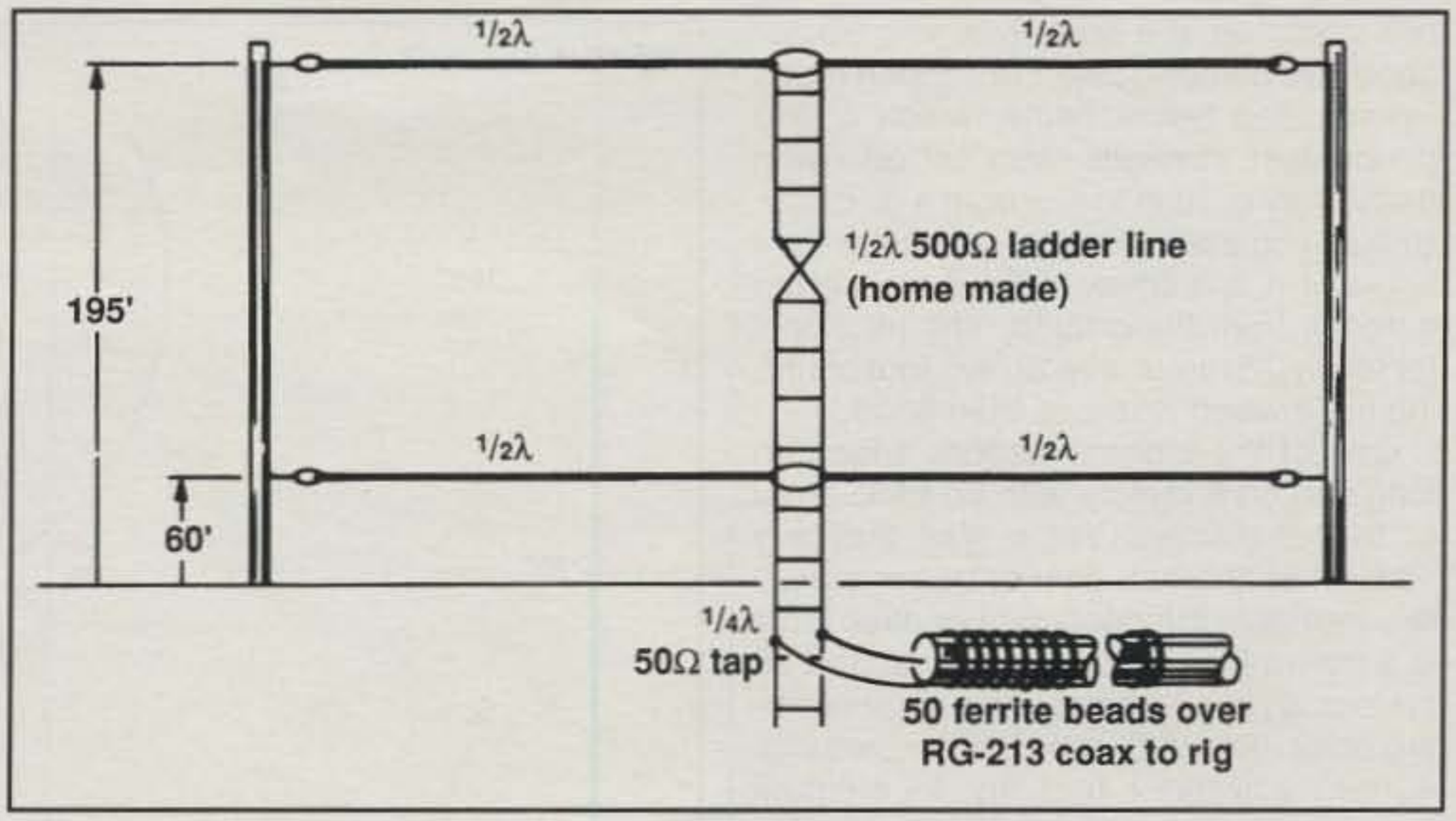


Fig. 5– The basic 4-element Lazy-H array.

Other Comments

I am very pleased that when I planned my original tower installations, I used Phillystran dielectric guy line. Otherwise, I doubt that my wire arrays would be very effective.

There are always trade-offs with whatever antenna installation one chooses. The switchable wire arrays on 75 meters afford me the opportunity to quickly switch between quadrants to find out which direction a weak station is coming from or to check front-to-back ratios. The disadvantage is that I have four nulls between the four lobes that are 10 to 12 dB down from the peak lobes. That means I have the equivalent of a high dipole or a four-square vertical array for the null directions. Fortunately, there is little DX in those directions, so I don't find it to be much of a problem.

I wanted to keep the large arrays as inconspicuous as possible for my wife and neighbors. To do that, I used #14 gauge electric fence copper wire I bought from the local Farm and Ranch Supply store. I

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pre-stretched the wire with my tractor about five percent (5%). For support ropes I purchased Seine Twine, which is 350 pound test strength black-tarred nylon that is very difficult to see from a distance. Unless you catch the sun at just the right angle, it is extremely difficult to see the antenna from the ground. The total cost for all my 75 meter wire arrays (not counting the towers) was less than $500.

One of the biggest lessons I learned long ago on 6 meters with an EME array of four 9-element Yagis was that any amount of antenna gain or power simply will not make up for poor propagation. This is a truism for all amateur bands, and 75 meters is no exception. When the northern polar route to Europe is corrupted with auroral activity, I find my 14-element super Yagi cannot compete with dipoles in southern California. However, when there is no polar absorption, I can really compete with any of the big guns west of the Mississippi. For someone who has always operated from the western USA, running a European pile-up on 75 meters is really a thrill.

Recommendations

For those readers who have an interest in 75 meters and who have a tall tower or two, I think you should consider putting up one or several wire arrays. The cost is considerably less than a dedicated 80 meter rotary Yagi on a tower large enough to handle it. I will warn you that without a portable impedance analyzer, the task may not be as enjoyable and may be down right frustrating, but the results should make it all worthwhile. Obviously, these same antenna ideas can be used on 160 or 40 meters with equally good results.

DXers are a great breed who are very competitive but are always willing to share their knowledge with others, knowing full well they may be planting the seeds for being knocked down a position in the pecking order. Several operators who have been on the band for several decades claim that 28 elements is the largest array they have heard of. It is my hope this article is an incentive for someone to build something much larger. I look forward to hearing about other stations' efforts in pressing this band to new limits. ■

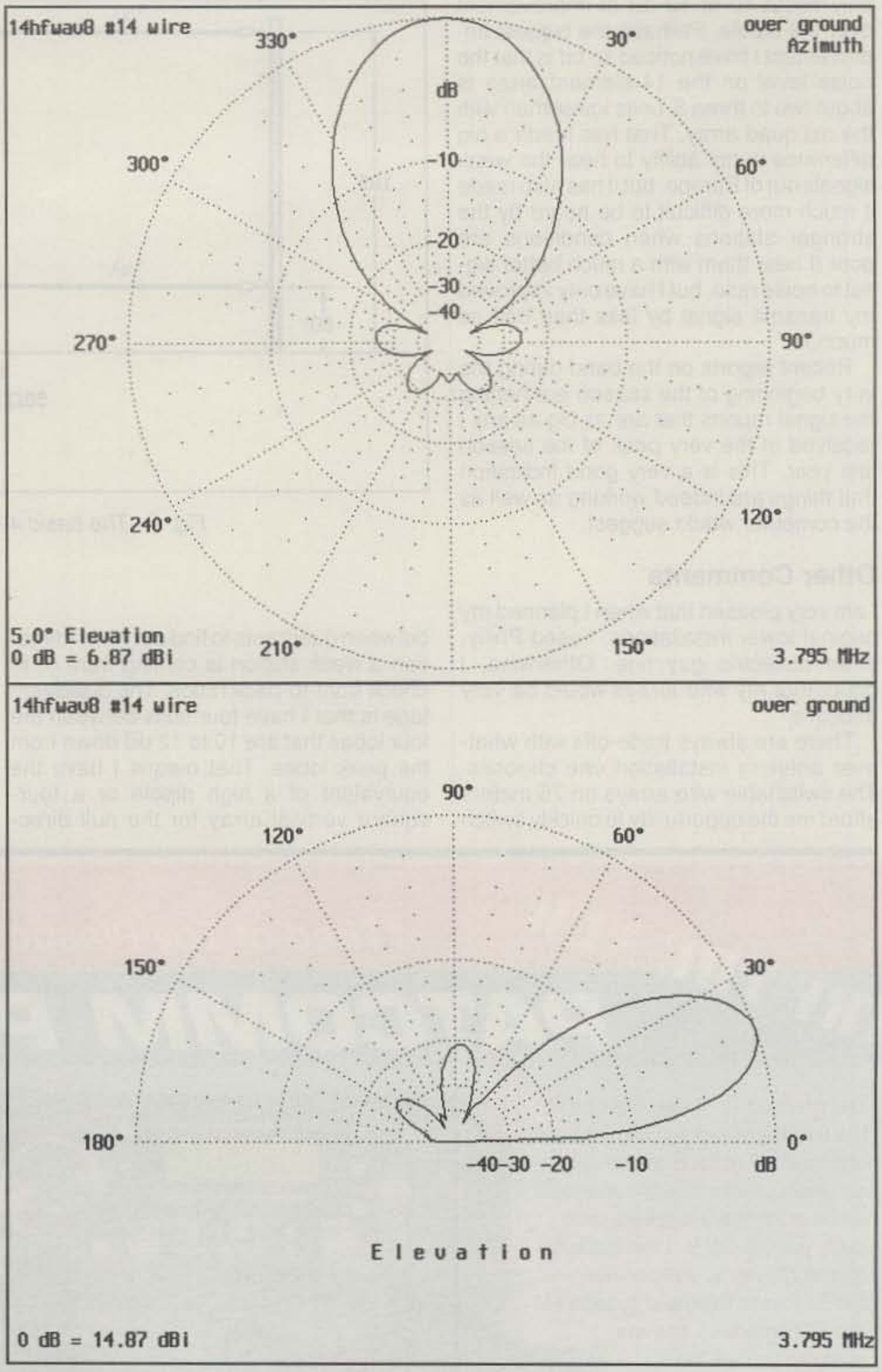

Fig. 6– Azimuth and elevation patterns for the 14-element array.

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- ***Great for ICOM IC-706***
- ***15 dB low noise GaAsFET preamp***
- ***Reverse polarity protection/SWR Protection***
- ***FREE mobile bracket***
- ***Auto T/R switch***
- ***FREE handheld BNC to B-310-G cable***
- ***Ultra-compact 4¾x1¾x7¾ inches, 2½ pounds***
- ***One year MIRAGE warranty***

Boost *your 2 Meter handheld to 100 Watts!* Ultra-compact all mode B-310-G amp is perfect for *all* handhelds up to 8 watts and multimode SSB/CW /FM 2 Meter rigs. *Great for ICOM IC-706!*

35 Watts for 2 Meter HTs

B-34-G
$89.95
Suggested Retail

Power Curve -- typical B-34-G output power								
Watts Out	18	30	33	35+	35+	35+	35+	35+
Watts In	1	2	3	4	5	6	7	8

- ***35 Watts Output on 2 Meters***
- ***All modes: FM, SSB, CW***
- ***18 dB GaAsFET preamp***
- ***Reverse polarity protection***
- ***Includes mobile bracket***
- ***Auto RF sense T/R switch***
- ***Custom heatsink, runs cool***
- ***Works with handhelds up to 8 watts***
- ***One year MIRAGE warranty***

MIRAGE RUGGED!

35 watts, FM only . . . $69.95

B-34, $69.95. 35 watts out for 2 watts in. Like B-34-G, FM only, less preamp, mobile bracket. 3⅛x1¾x4¼ inches.

MIRAGE Dual Band 144/440 MHz Amp

BD-35
$159.95
Suggested Retail

MIRAGE RUGGED!

Power Curve -- typical BD-35 output power							
Watts Out (2Meters)	30	40	45	45+	45+	45+	45+
Watts Out (440 MHz)	16	26	32	35+	35+	35+	35+
Watts In	1	2	3	4	5	6	7

- ***45 Watts on 2 Meters/35W on 440 MHz***
- ***Auto Band Selection***
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- ***Full Duplex Operation***
- ***5x1¾x5 inches***
- ***FREE mobile bracket***
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- ***Reverse polarity protection***
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- ***One year MIRAGE warranty***

Add this Mirage *dual band* amp and boost your handheld to a *powerful* mobile or base -- 45 watts on 2 Meters or 35 watts on 440 MHz! **Mirage's** exclusive *FullDuplexAmp*™ lets you talk on one band and listen on the other band at the same time -- *just like a telephone conversation.* (Requires compatible HT).

6 Meter Amplifier

FCC Type Accepted

The A-1015-G, $389, is the *world's most popular* all mode FM/SSB/CW 6 Meter amplifier. 150 watts out for 10 in. For 1 to 15 watt transceivers.

70cm Amplifiers (420-450 MHz)

D-3010-N, $365, -- 100 W out/30 in. For 5 to 45 watt *mobile/base*. **D-1010-N, $395**, 100 W out/10 in. *Dual purpose* -- for handhelds or mobile/base. **D-26-N, $269**, 60 W out/2 in, for *handhelds*.

Amateur TV Amps

Industry standard ATV amps -- **D-1010-ATVN, $414**, 82 watts PEP out / 10 in. **D-100-ATVN, $414**, 82 watts PEP out/2 in. (without sync compression).

Remote Control Head for Amps

RC-1, $45, remote controls most MIRAGE amps. Power On/Off, preamp On/Off, switch for SSB/FM. 18 foot cable (longer available). 1¾x3¾x2½ inches.

Repeater Amps

11 models -- continuous duty all modeFM/SSB/CW repeater amps for 6, 2, 1 1/4 Meters, 70cm, 450 MHz ATV.

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High gain *ultra low noise* GaAsFET preamps for receiving weak signals. Selectable gain prevents receiver intermod. 15 to 22 dB gain. Less than 0.8 dB noise figure. Automatic RF switching up to 160 Watts. **Choose** In-*Shack* model or *Mast-Mount* (includes remote control) model to reduce loss. Rugged die-cast enclosure.

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50-54	KP-1/6M	KP-2/6M
144-148	KP-1/2M	KP-2/2M
220-225	KP-1/220	KP-2/220
430-450	KP-1/440	KP-2/440

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Choose from 10 models -- 20 to 220 watts out for 2 to 50 watts in, $129 to $655.

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FCC Type Accepted

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CIRCLE 135 ON READER SERVICE CARD

As beautiful as the island of Dominica may seem, there are underlying dangers and threats to the population. Here's how the Dominica ARC and other island agencies planned for a possible emergency.

A Lesson for All Amateurs

BY RICK CURTIS*, WA6JKH, AND WAYNE ABRAHAM**, J73WA

Dominica (pronounced *Do-men-ee-kah*), is an island nation located near the middle of a string of tropical islands that extend from the eastern tip of Cuba to the northern coast of South America (see fig. 1). These islands, which include Puerto Rico, Montserrat, Trinidad, and Grenada, are on the boundary between two crustal plates called the Caribbean and Atlantic plates. The Earth's molten core is believed to move large portions of the crust, called plates, by convection (like water moves up and down when boiling in a pot). Boundaries between plates are weaker than other parts of the crust and are characterized by large faults, such as the San Andreas in California, and areas where lava moves easily to the surface.

Dominica, 30 miles long, contains 289 square miles of the most beautiful tropical scenery in the world. However, similar to Hawaii, it is comprised entirely of volcanic materials, including pyroclastic deposits and lava from at least ten known volcanoes. Late last year Dominica endured a swarm of earthquakes up to magnitude three or more. Seismic activity was centered south of the capital city of Roseau, near the villages of Loubiere, Giraudel, Pointe Michel, and Soufriere.

There were 30 or more of these events a day, which seismologists believe were related to lava moving under Morne Canot, a lava dome in a cluster of young volcanoes at the southernmost tip of the island. Long known as an area of potential volcanic activity, the entire island string, including Dominica, has been under the observation of scientists from the University of the West Indies, located in Trinidad. One of the scientists, a volcanologist named Dr. John Shepherd, visited Dominica recently. With his colleagues, he installed a network of seismic stations to monitor the earthquakes.

*e-mail Rick, WA6JKH: <rick@geotool.com>
**Wayne, J73WA: <abrahamw@cwdom.dm>

Jagged rocks on the coast of Dominica are a reminder of the geologically recent volcanic activity.

Dominicans had not paid much attention to the volcanoes on their island, in part because of the long period of time since any activity took place. The last major eruption was 450 years ago. About 150 years ago a relatively small event resulted in what is now called the "Boiling Lake." This lake is constantly boiling. It lies over the top of a crater, and the water is kept boiling by the heat from crater. Since the 1970s several swarms of earthquakes were reported, but they came and went with no volcanic activity. These could have been caused by plates rubbing together or by lava moving up under the island. Inconsequential quakes such as these tend to cause panic when they happen.However, when they disappear without volcanic eruptions, a false sense of security is instilled in the residents.

The most recent swarm of earthquakes began about October 10, 1998 and continued through the time this article was submitted in early December. The most disturbing fact about these particular quakes is that there was no way of knowing for sure if they would end in a volcanic eruption or simply be more in the series of quakes that have occurred since 1970.

One disturbing fact is that a swarm of quakes in 1986 was centered 5 km below the island. The 1998 series of quakes was only 2 to 4 km deep, alerting the islanders to begin evacuation of the south of the island. They planned for probable eruption patterns and determined which villages might need evacuation. They also outlined the best escape routes, avoiding thosewhich would be affected by rockfalls. Rock falls are common because of the fragmented type of volcanic materials deposited on the island.

Subcommittees were established to create a workable plan to address all aspects of an evacuation and deal with a possible eruption. The Telecommunications Subcommittee included Wayne, J73WA; Roger, J73MBQ; and three mem-

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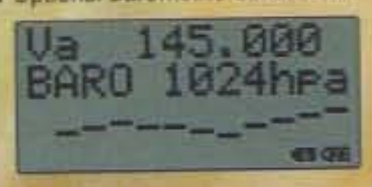

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Fig. 1– Dominica is an island nation located near the middle of a string of tropical islands that extend from the eastern end of Cuba to the northern coast of South America.

Waterfalls such as this one are a part of the beauty of Dominica that masks the underlying threats of earthquakes and volcanic eruptions.

bers of the police force. The committee was assigned the task of providing a practical communications plan to assist in the speedy evacuation of 12,000 people (within 12 hours) in 10 villages using a combination of police and ham radio facilities.

Following the meetings, the Dominica ARC members discussed moving their repeater site from Morne Anglais to a location farther from the potential eruption site. In addition, the members practiced communication procedures and traffic handling. Each emergency communicator had a "pick-up-and-go" emergency pack ready should a call to service occur.

In case the repeater went down, the club members decided on at least two methods of message handling. One plan included relaying through amateurs who live in the higher portions of the island. The other was via relays along the coast. They discussed having a boat about 5 miles off the coast of the island to assist in relaying traffic. High on the list of possible methods was the use of a potentially "sacrificial" low-power cross-band repeater in the form of a Yaesu FT-51R powered by an automobile battery and a small solar panel.

As part of the plan, amateur radio operators were to be placed at critical points along the escape roads to monitor traffic conditions on the roads. They would relay information if they observed traffic problems or other situations associated with the eruption. The Emergency Operation Center and Staging Areas would be manned by amateur radio operators, freeing police officers for duty elsewhere.

The dedication, enthusiasm, nationalism (How many countries do you know of that have a "National Day of Community Service"?) and great forethought demonstrated by the amateur radio community in Dominica is a shining inspiration to all amateurs in all parts of the world. Clubs, ARES, and RACES organizations should take note of one major point here. Not only should you prepare for the commonly occurring disasters which may affect your

One of Dominica's beautiful beaches.

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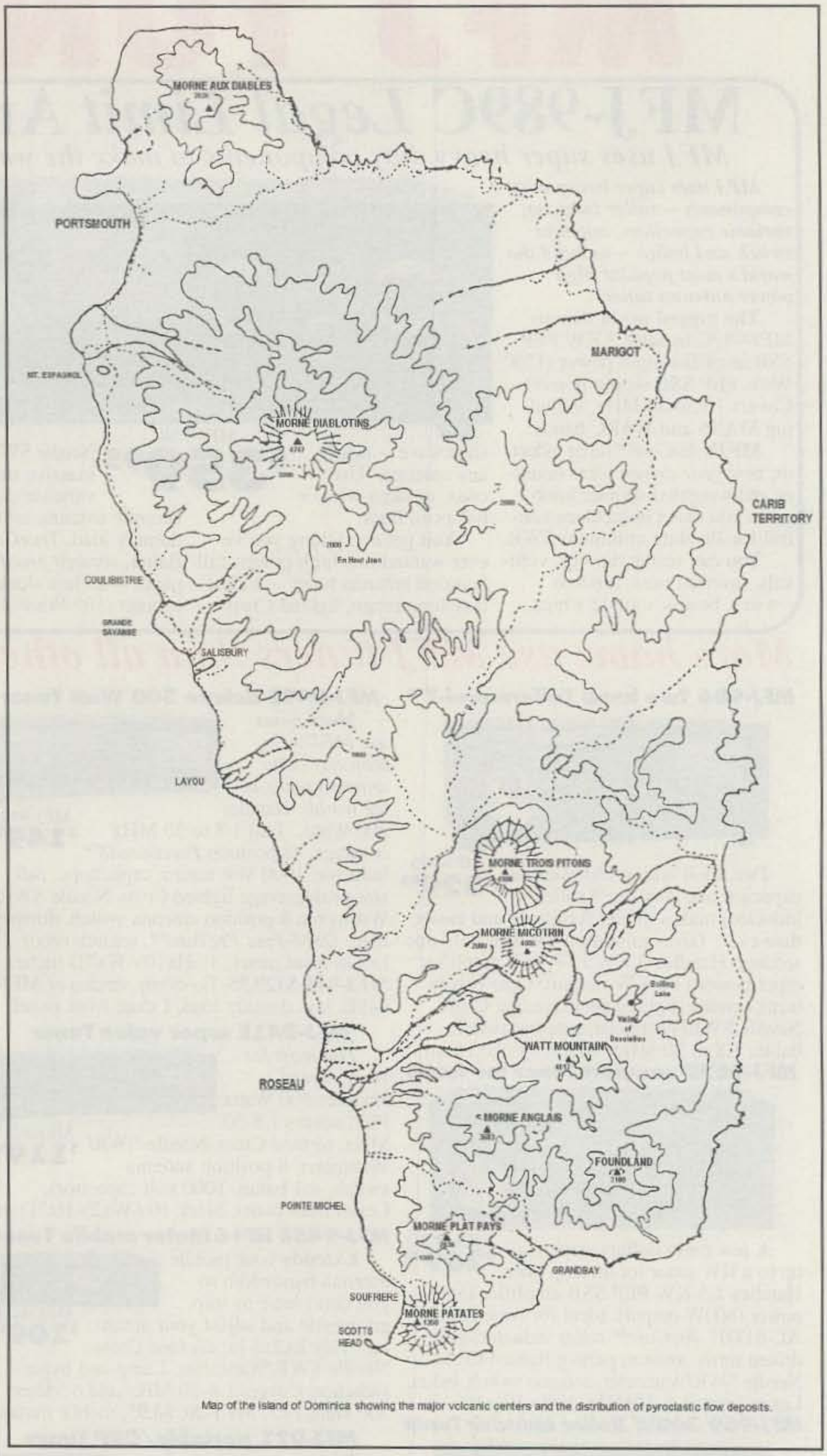
CIRCLE 180 ON READER SERVICE CARD

town, you must do more! Investigate the less probable disasters that may occur in your community and region. For example, in the central United States, where tornadoes, snow storms, and flooding are common, a moderate earthquake on the New Madrid fault (or other smaller faults) could cause widespread damage to structures which were never designed to withstand earthquakes. The potential for such an earthquake is very low, but not impossible. It may seem far fetched, but what about a serious medical disaster? Mother Nature probably has some very strange viruses hidden that once unleashed could cause widespread problems.

To find out about what types of rare disasters could happen to your town, check with your local university's geology, meteorology, astronomy, biology, and other science departments. Many could be helped by amateur radio communications. Some may require only a common plan. For example, earth quakes, disease, and perhaps even meteor strikes would require a similar massive response using both local and long-distance communications. Floods perhaps would require other localized responses.

If you plan for any emergency, you will be ready for it and your fears will be reduced. Believe me, I lived through the 1971 earthquake in San Fernando and handled traffic for almost three weeks straight. My years of experience on the Western Public Service System helped me in handling traffic quickly and efficiently. I discovered that *during* a disaster is not the time to begin inventing the proverbial communications "wheel."

My hat is off to the amateurs of Dominica, and to all amateurs everywhere who contribute to the often mundane, but vital disaster preparedness efforts in their communities. ■



Map of the island of Dominica showing the major volcanic centers and the distribution of pyroclastic flow deposits.

Fig. 2– Map of the island of Dominica showing major volcanic centers and distribution of pyroclastic flow deposits.

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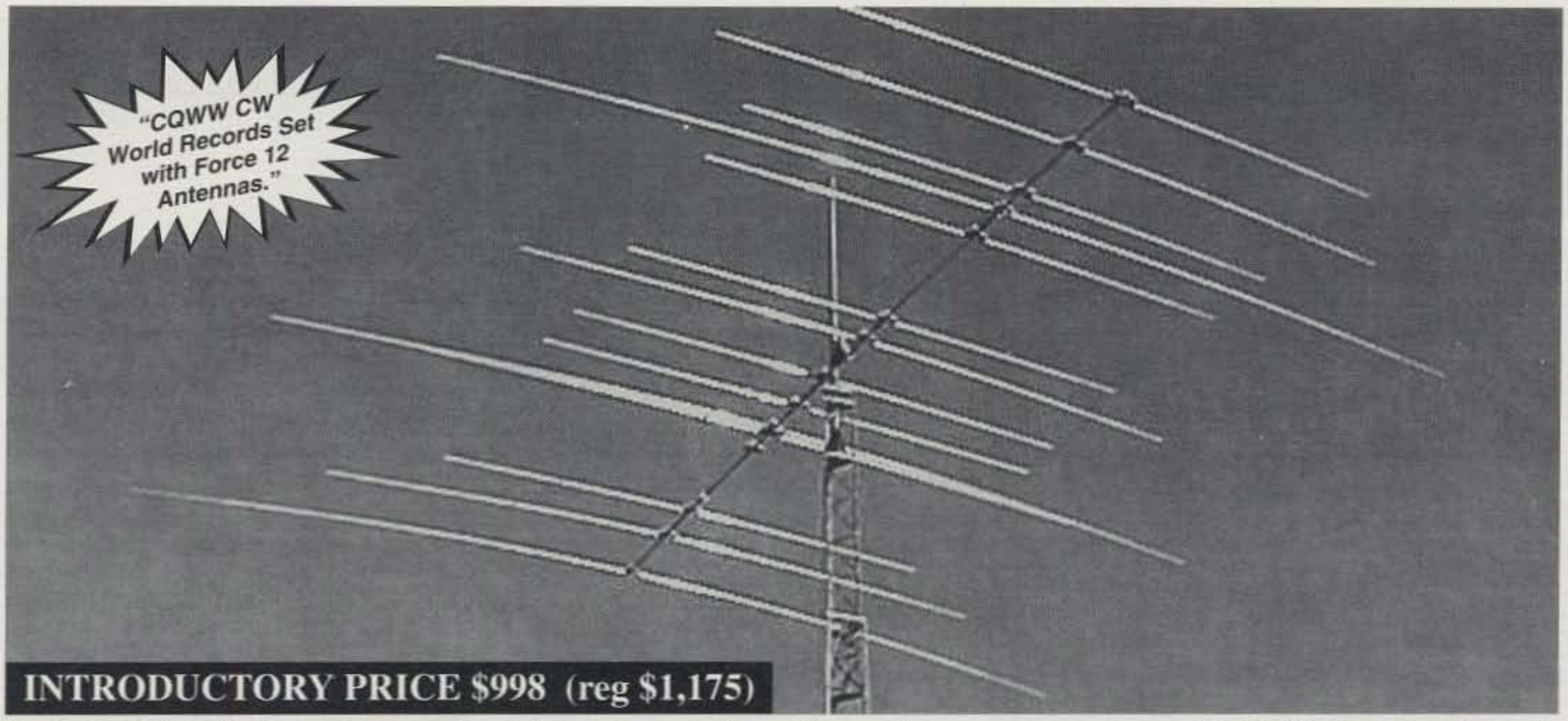

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If the impedances of your antenna and feedline are as far apart as your and the tax inspector's estimates of your income, then you may need a quarter-wave transformer for your antenna system.

The Quarter-Wave Transformer

BY GEORGE MURPHY*, VE3ERP

For years the handbooks have been telling us a quarter-wave transformer matching section will match almost any antenna to almost any feedline. This statement is usually accompanied by a diagram similar to fig.1 and a variation of the quarter-wave transformer equation shown in the sidebar.[1] Like many other non-technical amateurs, I generally have avoided the quarter-wave transformer because I could only guess at the actual operating load impedance of my antenna. And even when I used what I thought might be a reasonable guess in the equation, it always seemed to come up with some weird impedance for the matching section. This led me to believe I had guessed wrong. Obviously, the first step in designing one of these devices is to eliminate the guesswork. You have to measure the impedances of both the antenna and feedline.

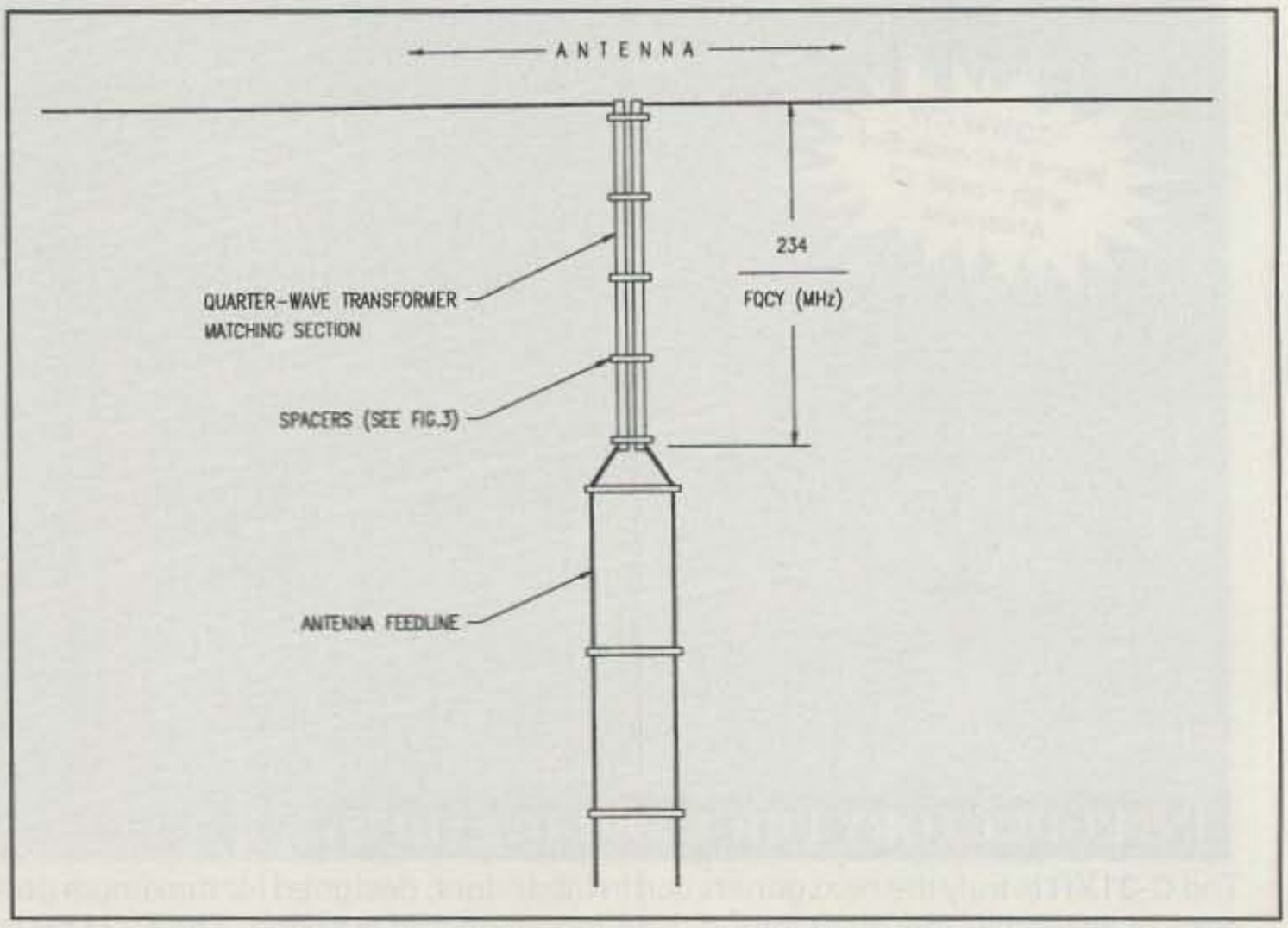

Fig. 1– Typical quarter-wave matching section as described in many handbooks.

Determining Impedances

Antenna impedance can be found in the comfort of your shack[2] by measuring the impedance at the input end of the transmission line with one of the current crop of small, affordable antenna analyzers. If you don't have one, you can homebrew one.[3]

If you are not sure what the impedance of your feedline is, it can be calculated with the open-wire equations presented in the sidebar or it can be read directly on the graph in fig. 2.

Once the impedances of both antenna and feedline are determined the required impedance of the quarter-wave matching section can be calculated with the transformer equation shown in the sidebar.[4] This is where the fun starts.

Your application may call for a matching section impedance far removed from any available standard store-bought open-wire line, so you may decide to make your own. Start by consulting fig. 2 again or by going back to the open-wire

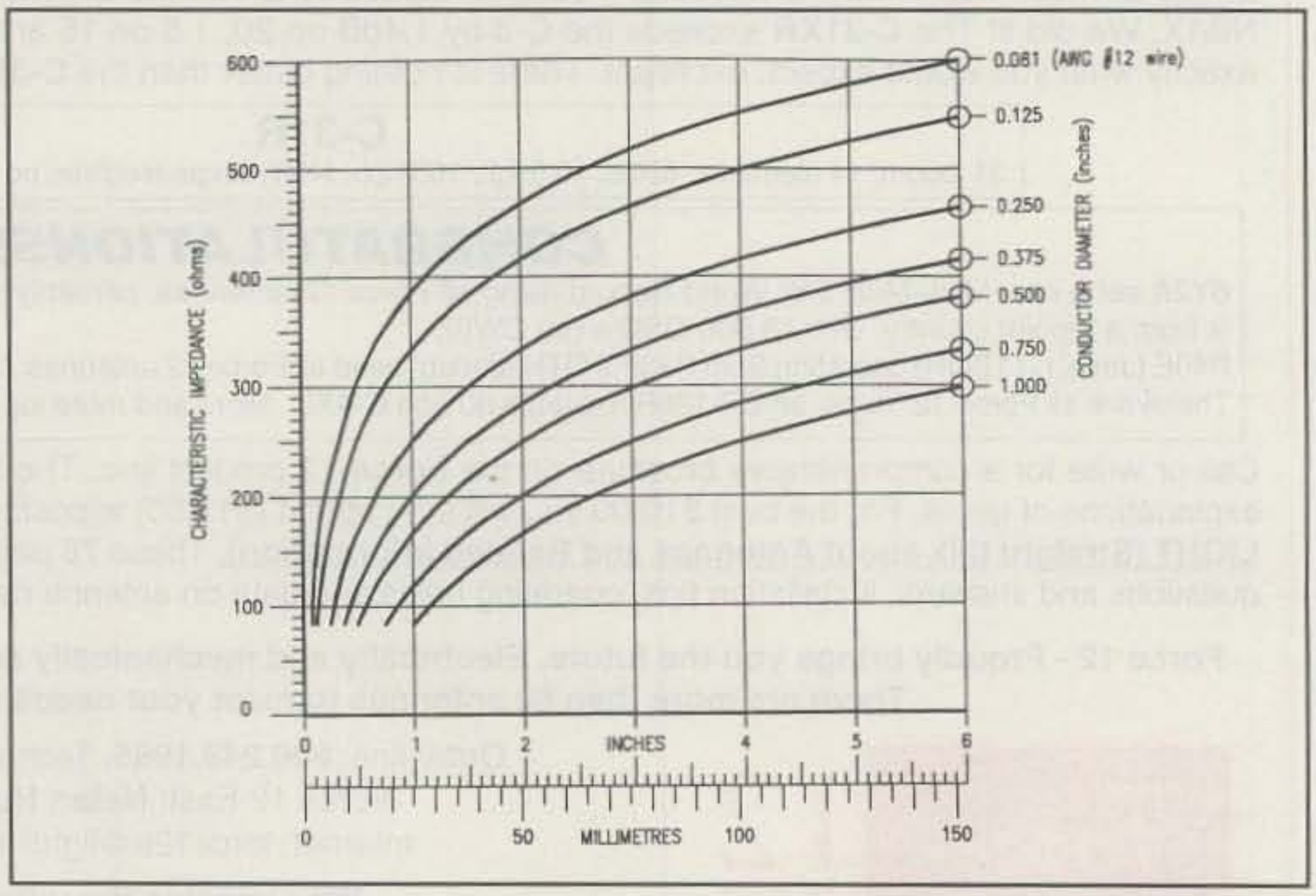

Fig. 2– Open-wire transmission line conductor spacing.

*77 McKenzie Street, Orillia, ON L3V 6A6, Canada
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QUARTER-WAVE TRANSFORMER EQUATION

$$Z_0 = \sqrt{Z_i Z_L}$$

where:
Z_0 = characteristic impedance of matching section
Z_i = impedance at input end of matching section
Z_L = impedance at load end of matching section

2-WIRE OPEN-WIRE LINE EQUATIONS

$$Z_0 = 276 \log_{10} \frac{2S}{d} \qquad n = \frac{Z_0}{276} \qquad S = 10^n \frac{d}{2}$$

where:
Z_0 = characteristic impedance of line
S = center-to-center spacing of conductors
d = diameter of conductors
S and d are in same unit of measure

AWG (American Wire Gauge) EQUATIONS

$$D_M = \frac{11.68}{1.123^{(n+3)}} \qquad D_I = \frac{.46}{1.123^{(n+3)}}$$

$$n = \frac{\log \frac{11.68}{D_M}}{\log 1.123} - 3 \qquad n = \frac{\log \frac{.46}{D_I}}{\log 1.123} - 3$$

where:
D_M = wire diameter in millimeters
D_I = wire diameter in inches
n = AWG number

equations to determine the size and the spacing of the conductors required for the transformer.

The Matching Section

At this point you may encounter an inherent bothersome fact about open-wire lines, which I call TFTFT (pronounced "tftft!")—the Too Fat To Fit Together syndrome. At impedances below 84 ohms the spacing between conductor centers becomes greater than the conductor diameter, as shown graphically in fig. 2. This is not a real problem, because in this range of impedances coaxial cable or commercial 75 ohm twinlead can be used for the matching section. However, the distance between conductors probably will be very close, in which case it is advisable to use tubing because of the difficulty of maintaining accurate spacing and parallelism if you try using wire.

Construction Notes

Fig. 3 shows the major construction details. Aluminum is an excellent choice for the tubing because it is lightweight and easy to cut and drill. If there is a physical support where the transformer is attached to the antenna, then copper pipe or tubing, although relatively heavy, is recommended. This is because the antenna elements and feedline can be soldered directly to the tubing, thereby eliminating the inevitable corrosion caused by electrolytic action between dissimilar metals (e.g., copper and aluminum) in contact, whether clamped, soldered, or welded.

You will need some small wood blocks about 12 mm (1/2 inch) thick, of a size to suit the "d" (diameter) and "S" (spacing) dimensions of the transformer, as shown in fig. 3(A). Clamp them together one pair at a time and drill two holes the same diameter as the conductors. It is a good idea to mark identification numbers on each pair of blocks, because if you are as unhandy a handyman as I am, the spacing will be slightly different (depending on the accuracy of your aim with a drill) on each pair. If the blocks get mixed up, you will have a tough time trying to fit them around the pair of tubes. Coat all the

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blocks liberally with a wood preservative and let dry. Finally, epoxy glue the block halves to each other and to the tubes, and then clamp them together until the adhesive sets.

As a rough guide, spacing between each pair of blocks along the transformer should be about 16 times the diameter of the tubing. Seal all the joints with silicone sealant, connect the antenna elements and the feedline, and haul the lot back up in the air before your XYL/OM discovers what you have been up to.

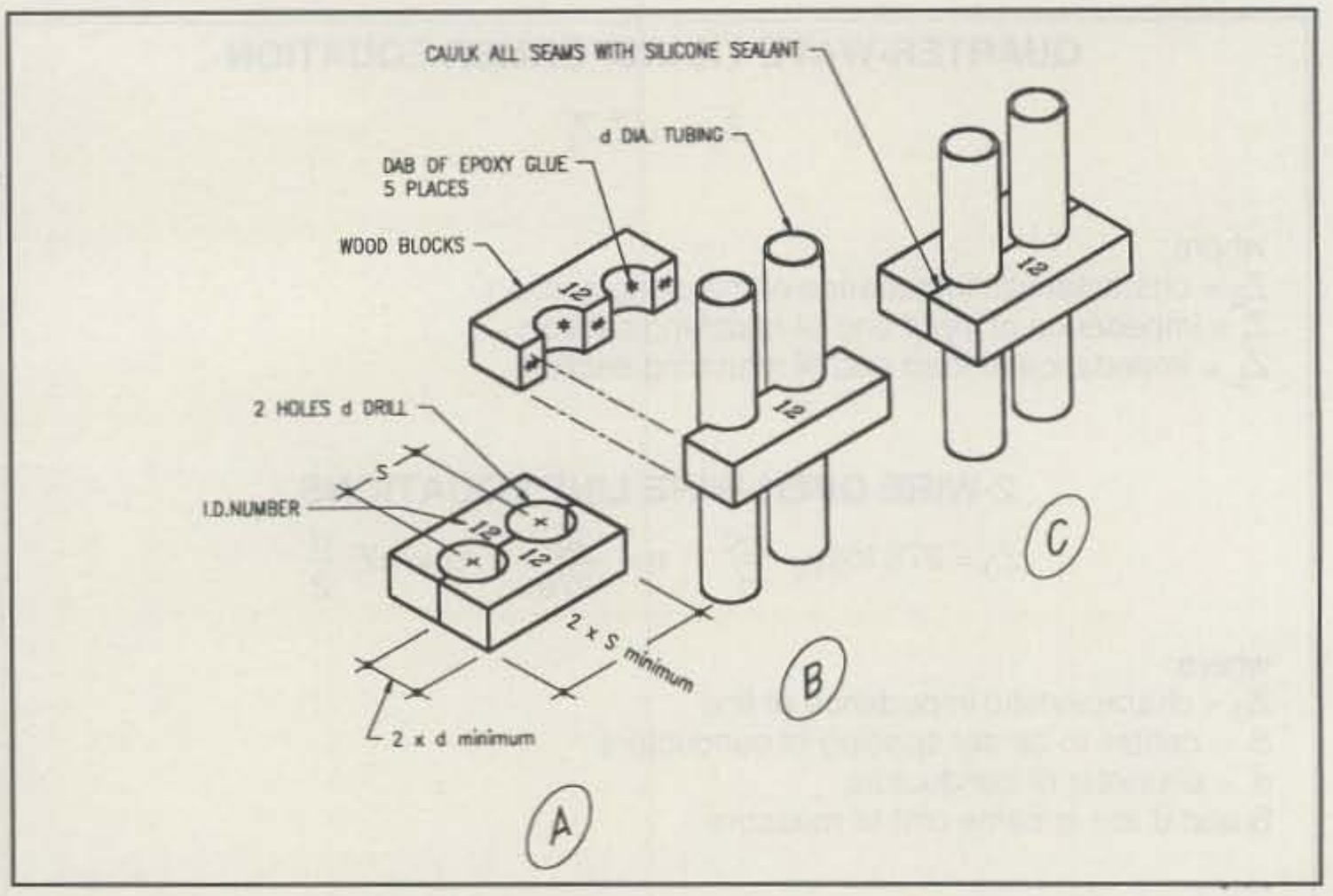

Fig. 3– Mechanical details for tubing supports when using tubing for matching line sections.

Footnotes

1. Don't let the equations intimidate you. You don't have to do any math at all if you have a computer and HAMCALC (Version 38 or later) software, which contains over 200 programs to do it for you. HAMCALC runs in MS-DOS or WINDOWS and requires a GWBASIC.EXE file in your root directory. To have HAMCALC on a 3½ floppy disk airmailed anywhere in the world send US$5.00 (US$6.00 if you want a GWBASIC.EXE disk included) to the author of this article, at the address shown on the first page.

2. HAMCALC's "Impedance – Antenna" program does just that, if you feed it the results of a couple of simple measurements.

3. See HAMCALC "Impedance Bridge (3 meter)" program. It describes G3LDO's simple device consisting primarily of a single meter, a three-position switch, and a few junk-box components. When connected to the input end of an antenna feedline, readings at each of the three switch positions are entered into the program, which calculates the antenna impedance.

4. From this point on, the HAMCALC "Quarter Wave Transformer" program will do all the math required to complete the design of your matching section. ■

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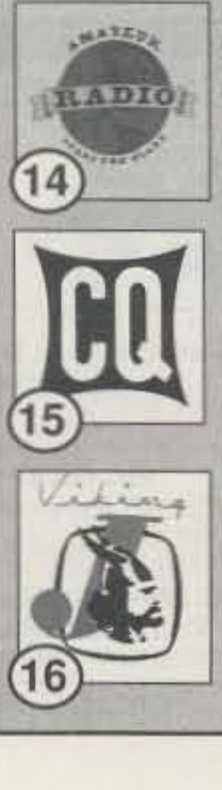

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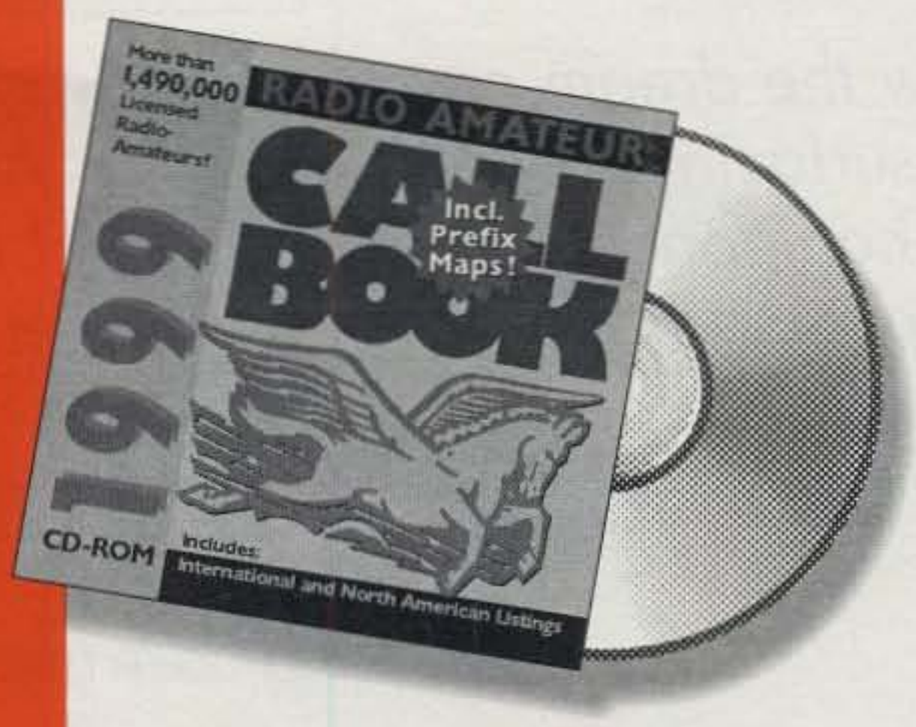

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Somehow the dream never goes away. It's always there someplace, wistfully surfacing from time to time. All that's needed is one small, tangible component of the dream to become real and available to make the whole thing happen. It doesn't get much better than this.

Big Bertha and Me

BY ROGER MINER*, K1DQV

Back in the sixties I would read the Telrex advertisements for their Big Bertha in the radio magazines and have pangs of desire to possess one of them. For those who are not familiar with the Telrex Big Bertha, it is a tapered pole with no guy wires, around 115 feet high, placed in a tube inside 24 yards of concrete and rotated from the base. Climbing pegs are located from the 12 foot level to the top, alternating every 15 inches.

A typical full-blown configuration of antennas at the time was a 6-element 20 on top followed down by a 6-element 15, a 6-element 10, a 3-element 40 in the middle, and then another set of 6-element 10, 15, and 20 meter Yagis. Switching options were available for upper-lower-both selections on each pair of antennas on each band. Many different configurations were installed all around the world.

Anyone familiar with the mono-band Telrex antenna design and construction can tell you they were built to last. The Big Bertha was a whole lot of performance with a very small foot print; the base is only about 7 to 8 feet square at ground level. In the sixties you could have had one of these for roughly $10,000, about the cost of an expensive luxury car.

In the seventies I visited Jim Lawson, W2PV, and took pictures of his Bertha. I was still in love. I have spent many days at the home of K6UA over the years and always spent time looking at his Bertha and the many configurations Dale has had mounted on the pole. The most ambitious configuration had to be his full-size 2-element quad on 80 meters, rotatable! Things change over the years, and presently Dale has a 2-element horizontal beam on 80 meters plus an array of Yagis on his Bertha (see May 98 *CQ*).

In February 1997 my friend George, K3UT, dragged me off to the Richmond Hamfest in our ongoing quest to find radio paraphernalia that we just couldn't live without. As I was leaving, a Telrex Rotor control box in very nice condition caught my eye. As I walked over to the table, it spoke to me: "Roger . . . buy me, buy me." The price was right, and as I got into the car I told George, "This is the control box for a Big Bertha!" What a great find—Telrex memorabilia. Little did I know it was the beginning of my biggest radio project ever.

A few days later I was on 80 meters telling Gary, WA1EHL, about this great find, and he said, "There is one of those Berthas that hasn't been used in years near my mom's house." Gary got the phone number from his mom. I called the present owners, and they said the Bertha was mine if I removed it at no cost or liability to the non-ham owners. The Bertha had been neglected for at least 20 years, and the trees and vegetation completely engulfed the lower 50 feet. Vines were growing up the feed lines, and treetops were in the lower 20 meter beam. The 3-element 40 had broken in a hurricane, and parts were dangling from the boom trusses like an exotic wind chime.

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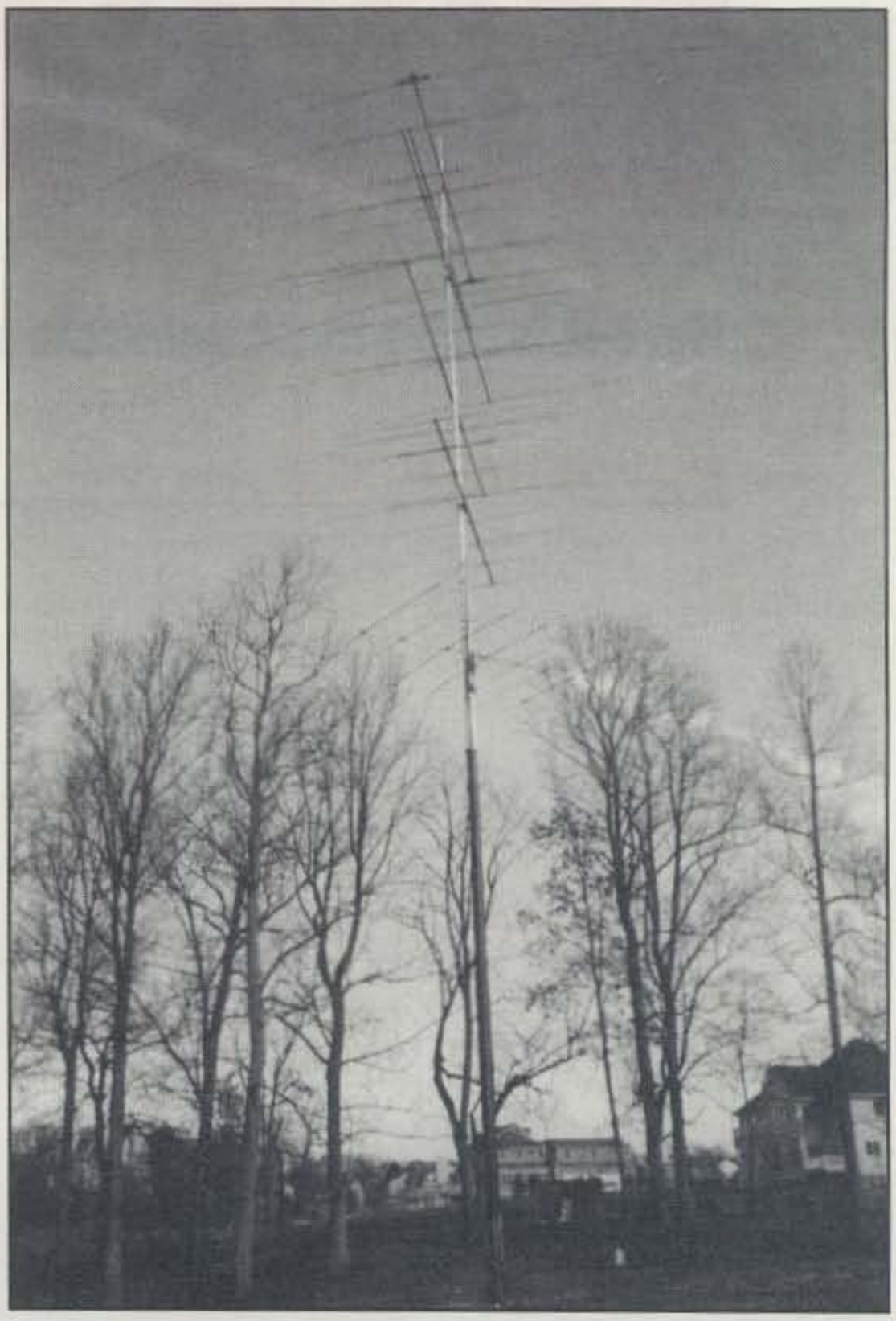

Okay, so it took over 30 years, it cost a bit more than I figured, and I needed a lot of help from a lot of people to make my dream come true. You bet it was worth it. The Telrex Big Bertha is a piece of amateur radio history and a great antenna system.

Things came together as I got a landscaper/tree guy (my sister's daughter's boy friend) to clear an area large enough to bring down the antennas. The tree guy knew a crane guy. A large crane was brought out, but the ground was too soft. The tree guy built me a gravel road to the Bertha, and then the crane guy came back. Some Berthas are bolted together and some are welded. This one was welded. The crane company had people climb the pole and cut off the top 40 feet. It was lowered down,

Say You Saw It In CQ

the antennas were removed, and then the next 40 feet was cut off and lowered. The remaining antennas then were removed.

The crane guy knew a truck guy. The truck guy picked up the Bertha and all the aluminum and put it on a 50 foot flatbed. In a few days he had it in my yard, 300 miles away. Joe, K3GJB, came over with a small crane and off-loaded the pole to the ground, where I had set a number of 6 × 6's. As you can imagine, $100 bills were flowing out of my pocket like leaves from a lawn blower. Well, it was too late to stop even though I'd already spent what I thought the whole project was going to cost.

A little research and a few phone calls later I had the original drawings of the Telrex Big Bertha base design, pole dimensional data, and the design for the tube that goes into the concrete. Tony, K3WX, had all the Telrex technical info on the antennas and rotators, so I was ready to go.

My first concern was to get the building permit from the county. I collected all my drawings and plans and went to the permits office just to ask what else I might need and what I had to do. The inspector looked over what I had and told me, "Give us $80 and I'll give you a permit." I was totally amazed.

K3WX knew a back-hoe guy who worked cheap and was very close by. I called him up, and in a few days we were digging the 7 1/2 foot square by 13 foot deep hole. Meanwhile, the in-concrete tube was fabricated by a friend who runs a waveguide fabrication company. This was a little out of their normal fabrication, but he cut me a good deal. He also fabricated the "table" that went into the concrete to hold the rotor assembly. The original rotor had succumbed to the elements and therefore was totally useless.

I had a brand new Boston Gear dual-reduction gear box and Dayton motor that my father, KK4QT, had given me years before. I had planned to rotate 120 feet of Rohn 45 with rings, but never built it. I built the rotor on a flat plate, added the sprocket for the #80 chain, built in the selsyn directional indicator with selsyns I had saved for 20 years, and added limit switches. Now I finally had a use for my Telrex rotor control box!

After the foundation hole was dug out with the back-hoe as far as it could go, K3UT squared the corners and dug out the last yard by hand. The big tube was set, formed up, and plumbed. A call to the local concrete company got me three 8 yard trucks dumping concrete into the hole. I make this sound simplistic, but actually it took many hours of hard labor by myself and local ham friends to get this far.

The back-hoe guy knew a welding guy. A call to the welder and I was ready to rebuild the pole. Using the back-hoe and other supports to hold the pole perfectly horizontal, it was welded back together into one solid piece 128 feet long (11 feet went in the foundation tube). The entire pole was wire brushed and sanded to remove all flakes and corrosion. The tube insert part of the pole was sand-blasted by K3WX's roving sand-blast machine, and then the whole pole was covered with Rust Reformer. Rust Reformer is a coating that changes any rust into an inert finish that will not rust in the future. It's not cheap, but it works wonderfully and leaves a surface that can be painted with standard Rust-oleum. In an attempt to camouflage the pole and be more environmentally friendly, I painted the lower 52 feet green and the top white. Except for 2 AM on an overcast, moonless night, you can still see the Bertha.

The back-hoe guy knew a crane guy. I called the crane company and told them what I needed. No problem. Now we were talking "heart attack city." Would the pole stay together?Could it break? Was the welder right when he told me the welds were stronger than the pole? Had I built the base right?

I measured this thing ten times if I measured it once, but what about Murphy? The crane operator looked at the pole, picked a spot, tied a lifting strap on, and said, "Let's do it." As the pole was lifted, I really thought that if I were going to have a heart attack, this was the time. I had heard stories of one of these

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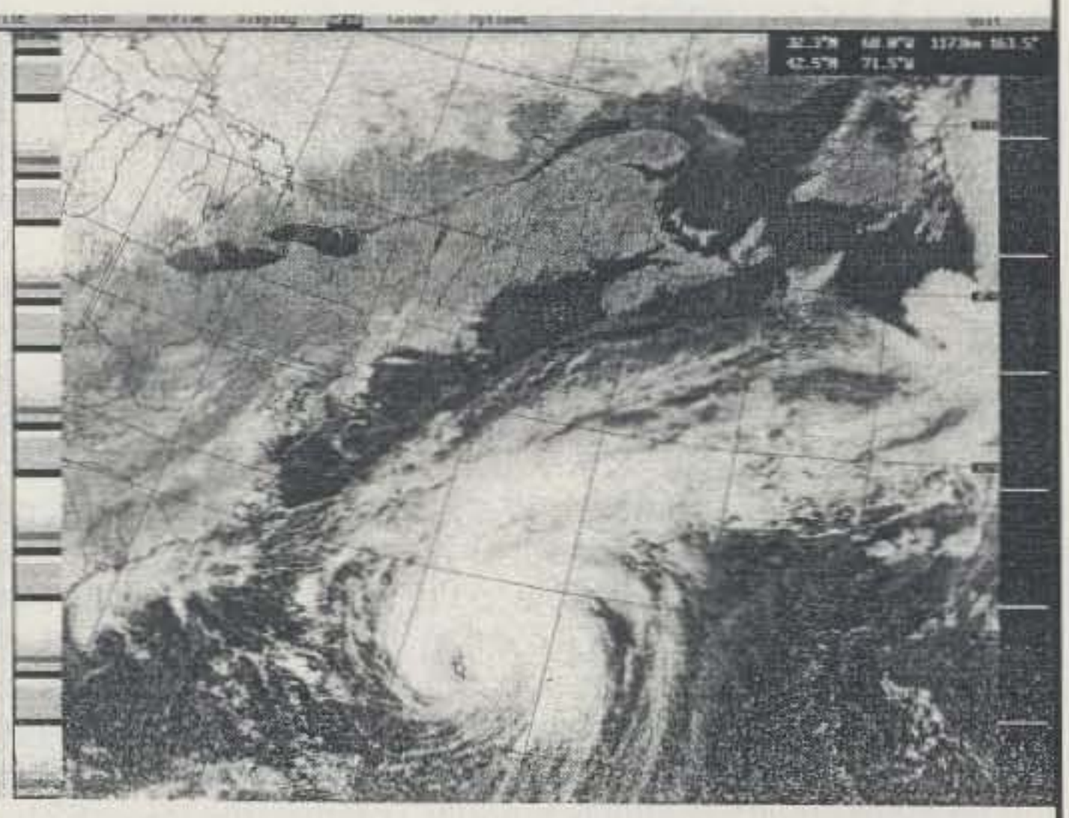

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Berthas out in St. Louis breaking at this point, and my mind was really going. When the pole got up to about 45 degrees, I started breathing again. The crane operator lifted the pole so smoothly and set it into place so perfectly that there was never a problem. With the pole now setting in the tube and without the rotor chain connected, I could easily rotate this 8000 pound pole by hand. The rotor was installed and tested, and I was ready for some antennas.

Frank, W3LPL, was very helpful in this phase of the project, giving me ideas where to place antennas on the pole and providing hardware and parts for building them. Three of the original Telrex antennas—a 6-element 20, a 6-element 15, and an 8- element 10 meter beam—were rebuilt.

Since one of my favorite bands is 80 meters, I wanted to put something on the top for that band. Tony, K3WX, had an old homebrew 2-element 80 meter beam that he had built with W3XE following the design of a 2-element 40 meter built by N3AA. After a little begging and a few Franklins, the antenna was mine.

W3LPL did a stress analysis on the antenna and told me that if I wanted it to stay up, some things need to be changed. The boom was lengthened to 34 feet, and the center section was made up of a 3 1/2 inch o.d. by 20 foot aluminum tube from the original Telrex 40 meter boom. The element centers were made up of four concentric tubes having an overall o.d. of 2.0 inches and telescoping out to the ends per Frank's analysis using NI6W's Yagi-Stress program. Since this antenna was to go on the top of the pole, I did not want to have survival problems with it. Once this 200+ pound monster was built, the question of how to put it up on the pole had to be addressed.

Norman, W3NRS (ex-K3LYW), had just the answer—a Hy-Gain winch, new in the crate! This 11,000 pound capacity winch was used to erect large log-periodic antennas. A little overkill, but the price was right compared to much smaller off-the-shelf units I had priced. The winch was bolted to the concrete base, and a steel cable was run through a pulley at the top of the pole. Lifting the 80 meter beam numerous times for tuning was very easy, and it was finally bolted to the pole at 112 feet by K3UT.

After taking the winter months to shake down the 80 meter antenna, I was happy with its performance and it was time to continue with the other antennas. The next antenna was the Telrex 6-element 15 meter Yagi at 105 feet, winched up and bolted in place again by K3UT. The 20 meter beam (6 elements, 46 foot boom, and 185 pounds) was next and was bolted in place by W3LPL at the 96 foot level. At 76 feet the Telrex 8-element 10 meter Yagi had been put up temporarily for the 10 meter contest. This antenna was taken down so that the 4-element KLM 40 meter antenna could be installed at the 86 foot level. After the performance of the KLM 4-element was verified, the 10 meter Yagi was put back up.

Having all these antennas on one pole did have the problem that all of the antennas pointed in the same direction. My cure for this was to side mount a TH7DXX tribander at the 58 foot level and put it on its own Tail Twister rotator. This gives me a high-angle antenna on the three high bands that is independent from the others so that while the high antennas are on Europe, the TH7 can be on the Caribbean area and so on. Additionally, in trees around my yard I have a 3-element Bob-tail curtain for 80 meters fixed on Europe and 40 and 80 meter dipoles at 85 feet for the local high-angle signals.

All the feed lines and control cables run underground for easy lawn care, and with no guy wires it makes a nice clean installation. You may ask, "Does it work?" Well, let me just say that I don't spend a lot of time in pile-ups.

Next year I have plans to put up a 2-element beam on 30 meters and a dual bander for 18 and 24 MHz.

I would like to thank WA1EHL, K3UT, K3WX, W3LPL, W3NRS, W3EKT, K3GEG, K3XXX, N3YDT, KK4QT, K6UA, WA7YZF, and my cousin Ken for all their help in this reincarnation of a Telrex Big Bertha. ■

Finding your favorite amateur radio magazine on the World Wide Web is now easier than ever, plus you won't have to go digging through back issues to remember our e-mail addresses. Come visit us . . . @cq-amateur-radio.com.

New CQ Web Site, E-Mail Addresses!

By RICH MOSESON, W2VU
CQ On-Line Coordinator
w2vu@cq-amateur-radio.com

As more and more amateurs find a "second home" on the Internet, it becomes more important to us at *CQ* to be easy to find on the World Wide Web and easy to reach via e-mail. We've recently taken another step in that direction—with a domain name of our very own. Once everything is operational (which we're hoping it will be by the time you read this), you'll be able to check out the latest issue of *CQ* before it hits the newsstands, contact our editors and columnists, and in response to many of your requests, you'll also be able to place orders and enter new subscriptions or renewals directly online through a secure server to protect your privacy. Our new domain name is **cq-amateur-radio.com**, and our new web address (URL) is <**http://www.cq-amateur-radio.com**>.

A "Real" Webmaster

Along with our new domain name came a new webmaster, someone who actually does this professionally—Doug Bailey, KØFO. The first thing Doug did was give our site a total facelift, with prettier graphics, a nicer design, and much faster page-loading. Then he added a guestbook (please sign in and say hi) and a search engine to let you find the keyword of your choice on any file within the site. Doug will also be working on greatly expanded web links, both to our advertisers and our readers. If you have a ham-related link you'd like to see on our site, and you'd like to put a link to us on your site, please drop a line to Doug at <webmaster@cq-amateur-radio.com>.

New E-Mail Addresses

Another bonus that came along with our new domain name is the ability to have consistent e-mail addresses for everyone connected with the magazine. We have a bunch of new e-mail addresses for you to put into your address books, and they're all @cq-amateur-radio.com. If you want to send a note to *CQ* Editor Alan Dorhoffer, for example, you can e-mail him at <k2eek@cq-amateur-radio.com> or even just <editor@cq-amateur-radio.com>, and it will get to him. See Table I for a complete list of who's who (so far) @cq-amateur-radio.com. Table II lists the websites of our sister magazines.

We'll Keep the Light On

Fire up your web-browser and come pay us a visit at <http://www.cq-amateur-radio.com>, look around and sign the guestbook, and give us your ideas on how to make it even better.

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Norm Koch, K6ZDL (CQ WPX Award)	(use postal mail)
Billy Williams, N4UF (CQ DX Award)	(use postal mail)

Table I– New e-mail addresses of CQ departments, staff members and columnists.

CQ Publications' Internet Domain Names

**CQ Amateur Radio*	www.cq-amateur-radio.com
CQ Contest	www.cq-contest.com
**CQ VHF*	www.cq-vhf.com
Communications Quarterly	www.comm-quarterly.com
Electronic Servicing and Technology	www.electronic-servicing.com
**Popular Communications*	www.popular-communications.com

*Table II– New Internet domain names for all CQ Communications, Inc. magazines. To access our websites, type <**http://**> (without the brackets), followed by the address above (starting with **www**). Not all of these sites are online yet, but we're working on them. Those with an asterisk (*) are online at press time (in late January).*

It's simple, easy to make, and best of all it works. Here's a weekend project that will give a new lift to your old antenna.

How To Build A 30 Foot Tilt-Over Mast

BY JOSEPH M. PLESICH*, W8DYF

Since we were planning some extensive remodeling, I felt it was time to get my antennas off the house and onto some type of mast. The center of my double extended Zepp and my 2 meter fiberwhip were supported by a section of TV mast fastened to the house. With much needed windows and siding coming to our old home, I wanted a new support for these two antennas which now would be off the house.

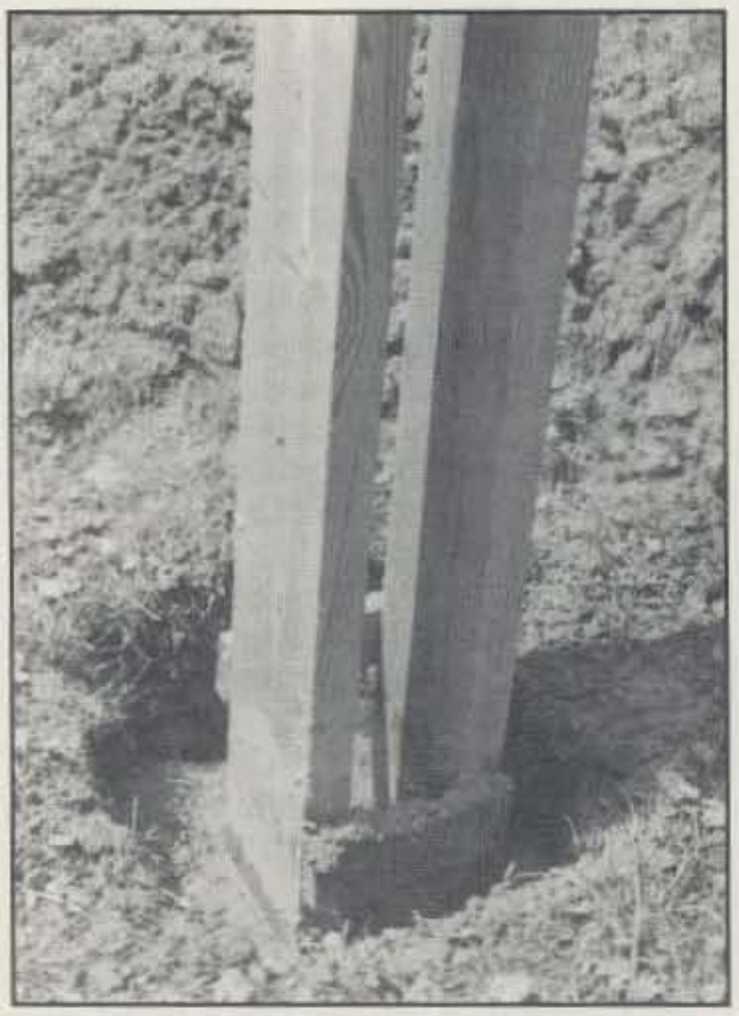
I did have some criteria for a new antenna support. Being retired now, it had to be inexpensive. It had to be at least 30 ft. high, tilt-over for adjustments, and most important, it had to be simple for me to construct.

Since I had built an 18 ft. PVC mast a few years ago and had read a couple of articles by other amateurs using PVC pipe, I thought that might be the way to go. My 18 footer was constructed with 2 inch and 1 1/2 inch pipe. This was not high enough and too flexible for what I needed. How about, I thought, trying 3 inch pipe and sandwiching it between two planks that would be set in concrete? Off to the drawing board I went.

Construction

I made a rough drawing of the mast and the planks that would support it (fig. 1). From this I came up with a list of materials that I could get from my local builder's supply house (see "Materials List").

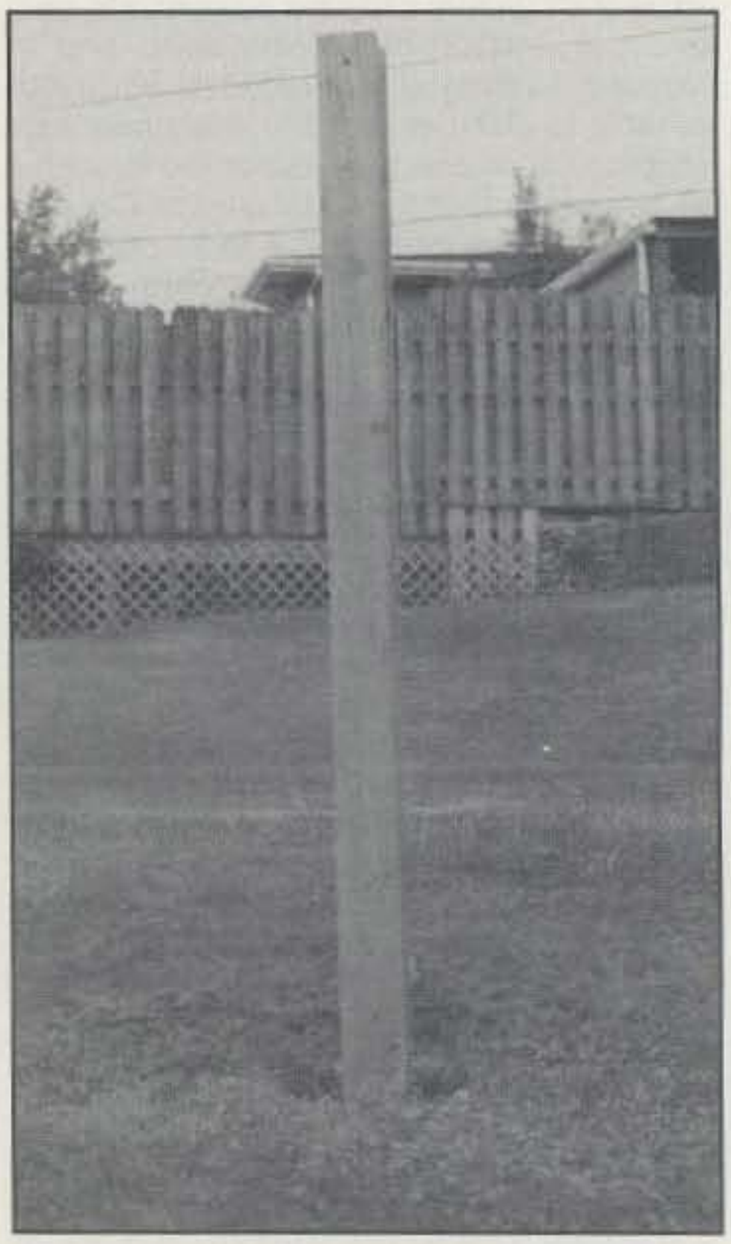
After obtaining the materials, the first thing I did was to lay the two planks of 2" × 6"'s down on the garage floor. Then I slid the 20 ft. pipe between them so I would have a snug but not tight fit. A couple of 1" × 2"'s were fastened across the 2" × 6"'s with screws to secure this width. I then drilled holes through the 2" × 6"'s and the pipe for the hex bolts. I inserted the bolts to make sure they fit properly and then removed them. I was now ready to plant the 2" × 6"'s.



The bottom 3 feet of the wooden supports are imbedded in cement.

I am fortunate to have a 22-year-old son, Andrew, who does some weight lifting. I was just delighted to give him the opportunity and fun of digging the hole for the 2" × 6"'s. He seemed to enjoy it so much that I also let him mix the four bags of concrete. All this, of course, was done under my benevolent supervision.

We slid the 2" × 6"'s into the hole, poured in the concrete, and using a post hole level, made sure they were straight.



Be sure the wooden supports are vertical and plumb.

The mast could now set for a couple of days while I finished the rest of the mast.

Now to join the 20 and 10 ft. lengths of pipe. To do this, I cut 2 ft. off the 5 ft. piece. Then, using an electric jig saw, I cut a slot a couple of inches wide the length of this piece (fig. 2). I recruited Andrew again. One of us spread the slot apart with a pry bar (something similar will do) while the other pushed the two pieces of pipe into the joiner pipe. (When you do this, remember to be careful and watch your fingers!)

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Say You Saw It In CQ

Materials for PVC Mast

two 2" × 2" × 10' pressure-treated boards @$7.64	$15.28
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two 5/16" × 8" hex bolts, nuts, washers	$1.90
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The fit was quite tight. We then put the hose clamps around the joint. I also had some steel wire that I wrapped around the joint. I suppose I could have put some screws into it too, but I didn't bother. Since I was able to get 20 and 10 ft. lengths of pipe, I only had to make one joint. If you can only get 10 ft. lengths, then you will have to make two joints if you wish to get to 30 ft.

I drilled two holes at the top of the mast and inserted eye bolts. By running rope through these bolts, I would be able to pull up my antennas and also tilt the mast over if necessary. I also put tape across the top of the mast to keep water from running down inside. I just love to tape!

For my 2 meter ground plane whip, I wrapped a 2 ft. piece of 1 inch dowel with tape (easier and cleaner than painting). With "U" bolts, I fastened the 2 meter antenna to the dowel and the dowel to the mast with two hose clamps. I taped the feedline to the mast and put tape over the hose clamps to protect them. As I said, I just love to tape!

It was now time to see if this thing would really stand up straight or flop over like a

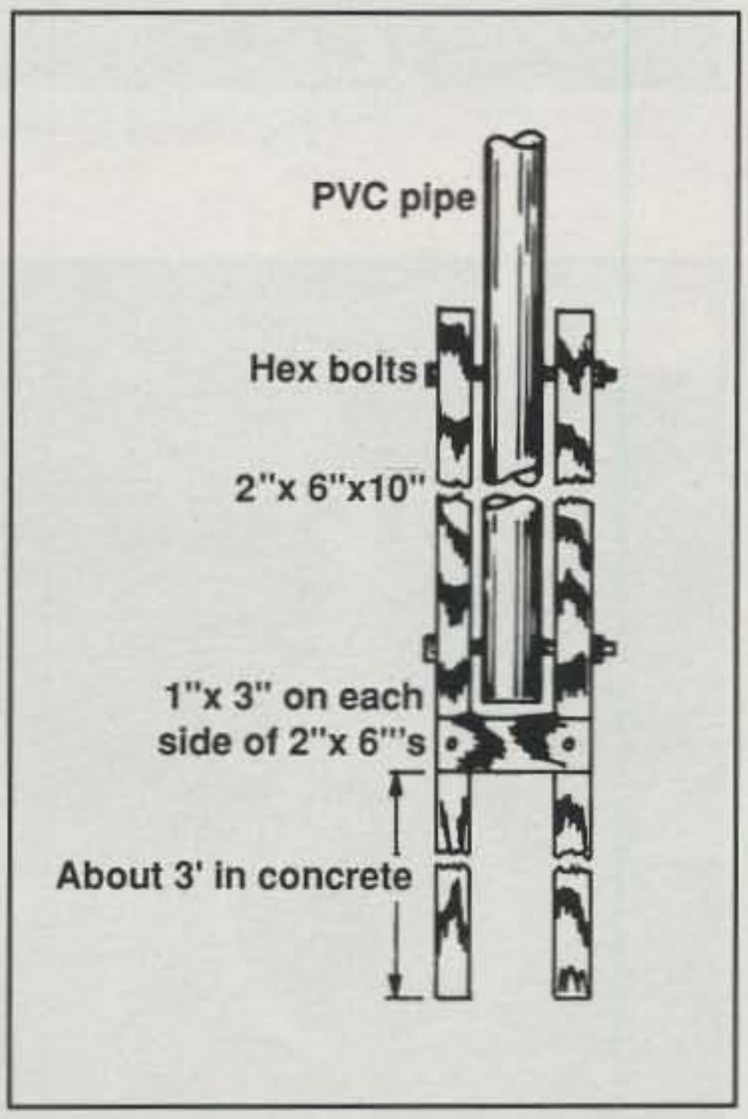

Fig. 1– Overall view of the mast support system.

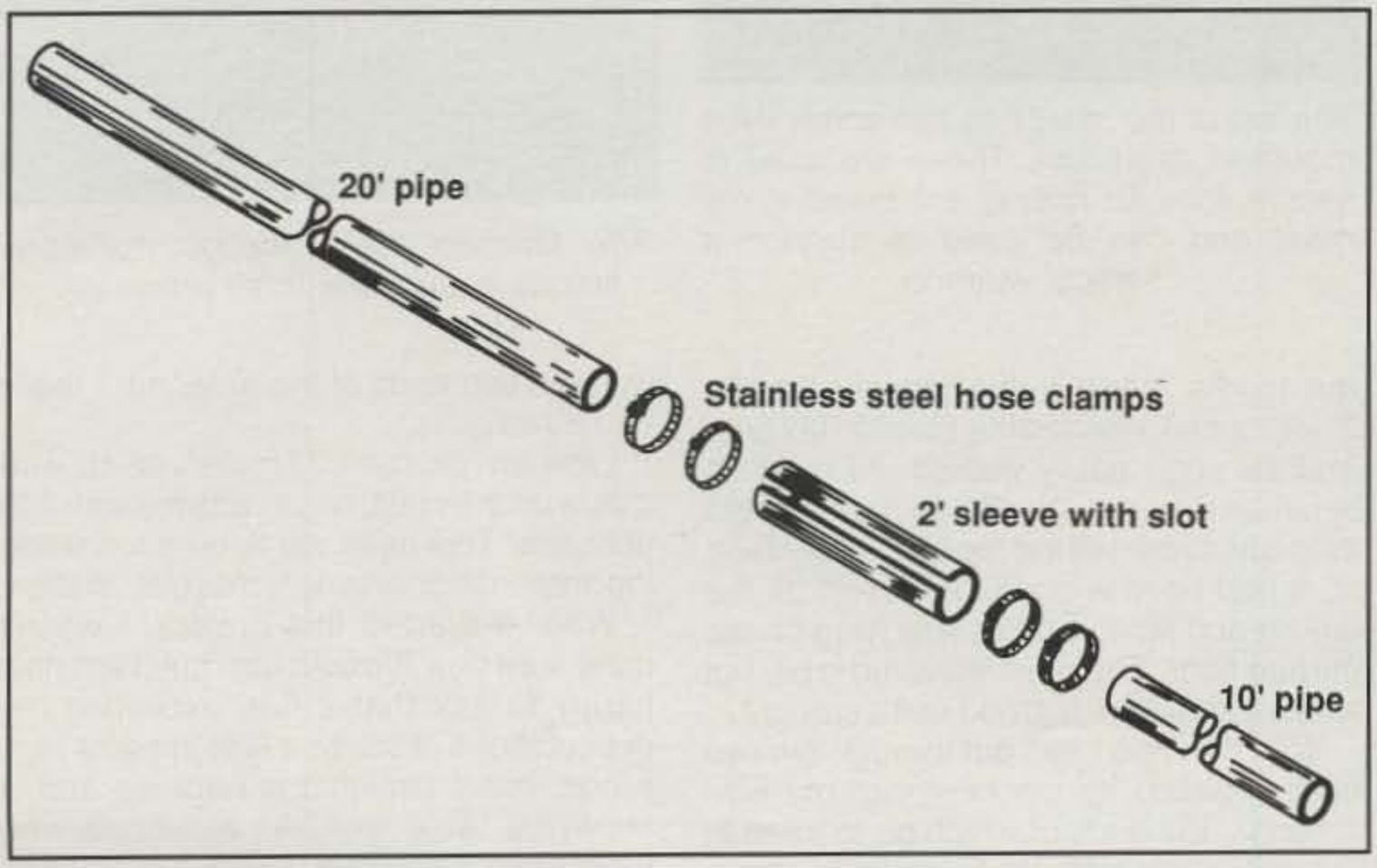

Fig. 2– The two sections of PVC are held together by a small section of PVC slotted to make a sleeve section. Stainless-steel hose clamps are used to make a compression fit.

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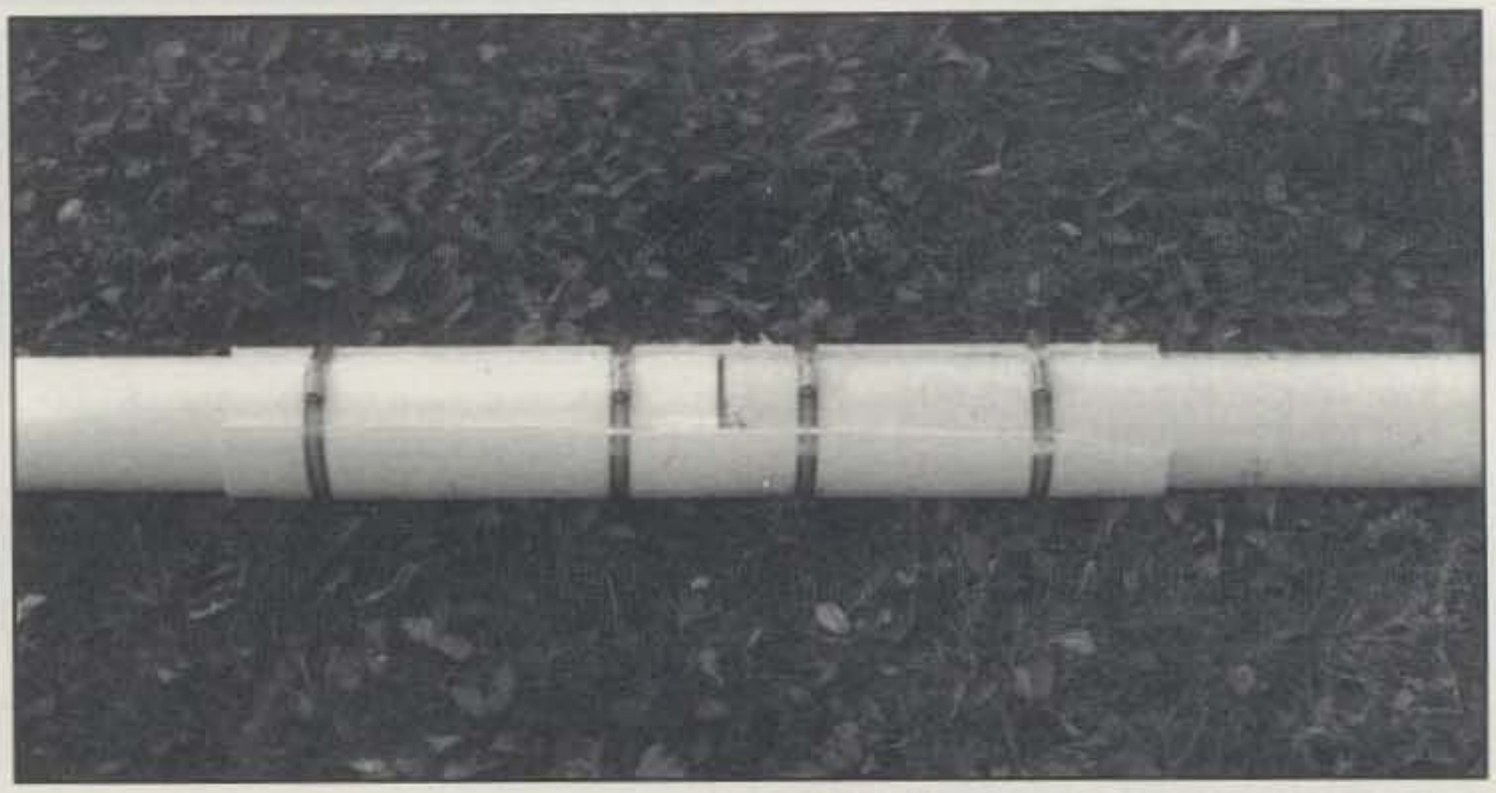
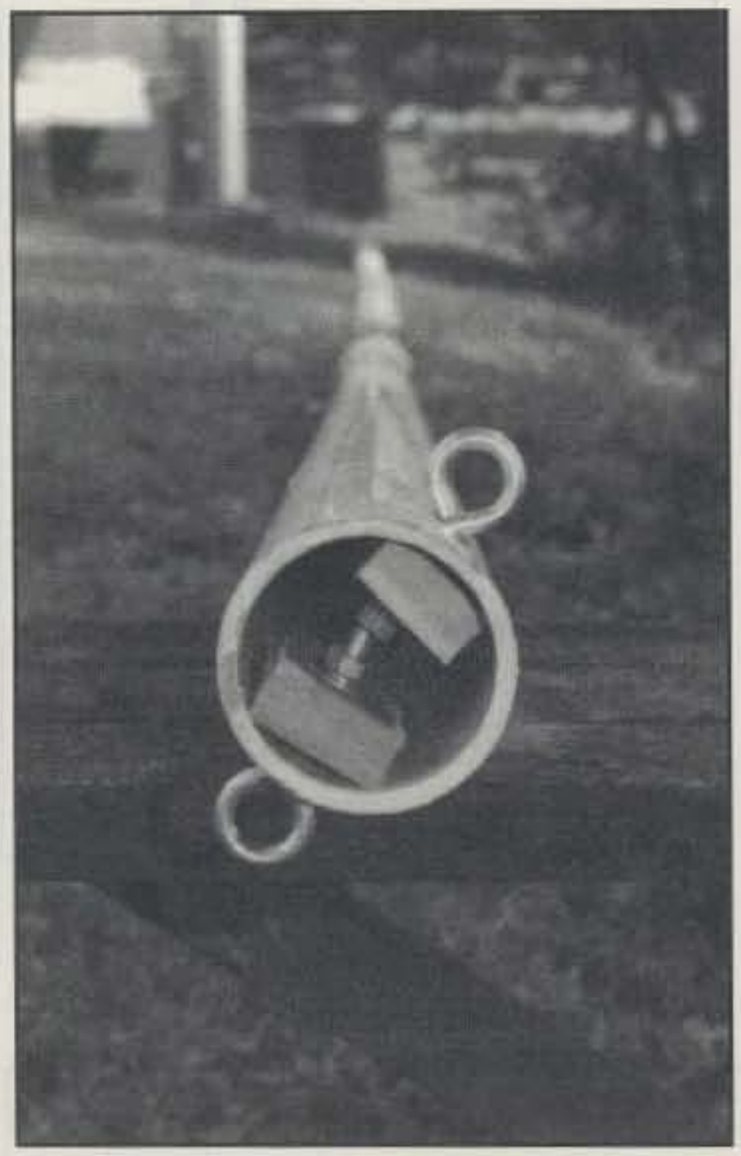
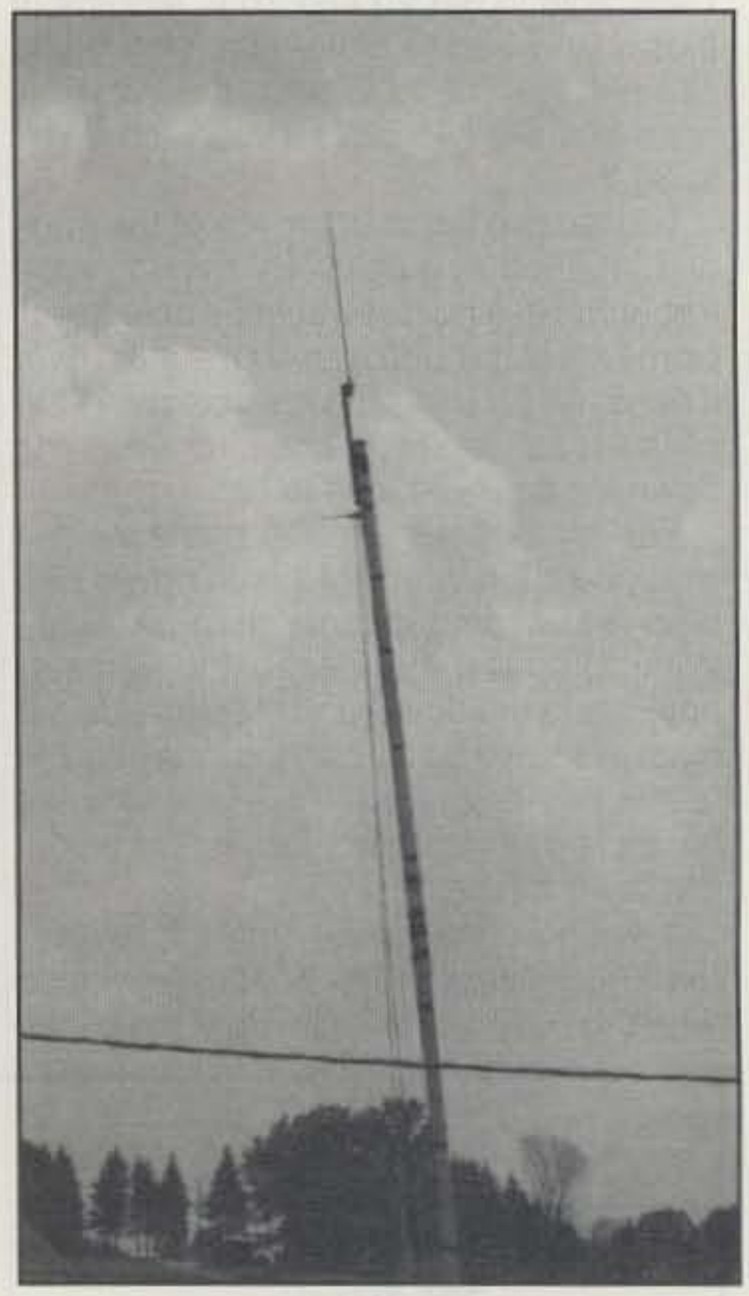


The sleeve section as depicted in fig. 2.



The top of the mast has two screw-eyes mounted as shown. These are used to secure lines for raising and lowering the mast and can be used to support a vertical antenna.



The finished mast, though not conspicuous, supports three antennas.

wet noodle. I slid the pipe between the two 2"×6"'s and inserted the bottom hex bolt. Andrew and I easily walked the mast up between the 2"×6"'s. While Andrew held it steady, I inserted the top bolt. Everything fit. It had been a good idea to do all the drilling and fitting while it was lying on the garage floor. The mast wavered a bit, but when it steadied, it stood quite straight.

With the rope I had put through the eye bolts, I pulled up the center of my wire antenna, the ends of which go to trees at opposite ends of my lot. Since I didn't have immediate use for the other rope, I tied it off at another tree. Therefore, together with the two ends of the antenna, I really had three guys.

Later on I did run a 20 meter vertical wire dipole up the mast, which was fed with 300 ohm line. This gave me three good working antennas on one neat mast installation.

When I started this project, I wasn't quite sure how it would turn out. I am now happy to say that it has exceeded my expectations. It bends a little in some high winds, but it straightens back up and is surviving quite well. All amateurs who have seen it approve. It was a great, fun, and very useful project. I don't think you can beat it for about $1.75 a foot! ■

What's So Unusual About This Arizona QTH?

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BY IRWIN MATH, WA2NDM

MATH'S NOTES

WHAT'S NEW AND HOW TO USE IT

It's That Time of Year Again!

The problems of antennas and antenna towers always seem to plague us. The higher (or longer) the better, but the higher you go the more comments you are likely to get from neighbors and sometimes local officials. In addition, for low band operation it is not uncommon to require several hundred feet of antenna wire for even a simple dipole.

Having the necessary real estate in the first place is a problem. Even if you do have the space, supporting such an antenna from a convenient tree or building is usually also a problem since, according to Murphy, nothing will be at the exact place where you need it. Moving the house is also not an option, but of course erecting a mast or tower is.

c/o CQ magazine

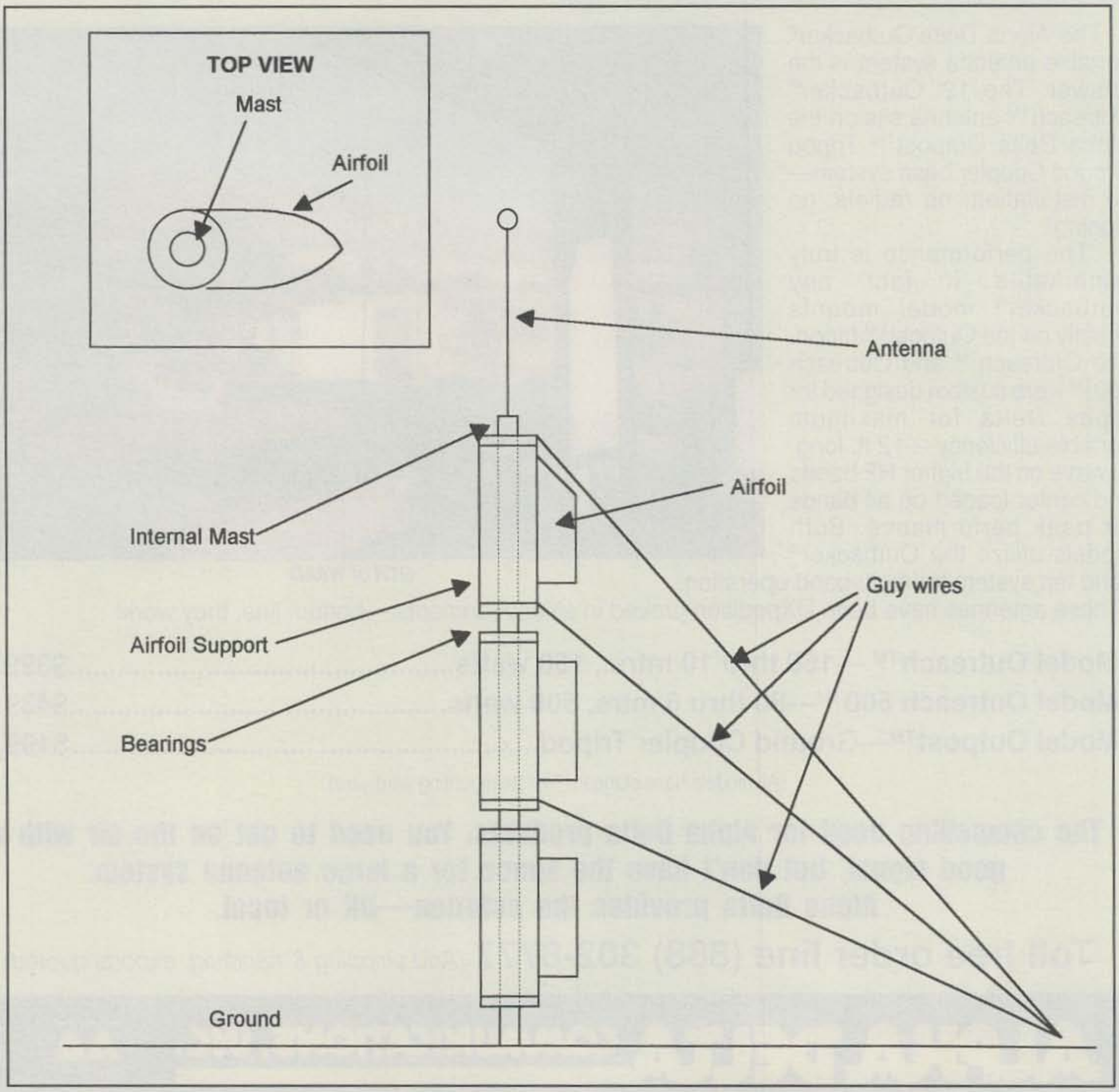

Fig. 1– Airfoil supported mast.

Say You Saw It In CQ

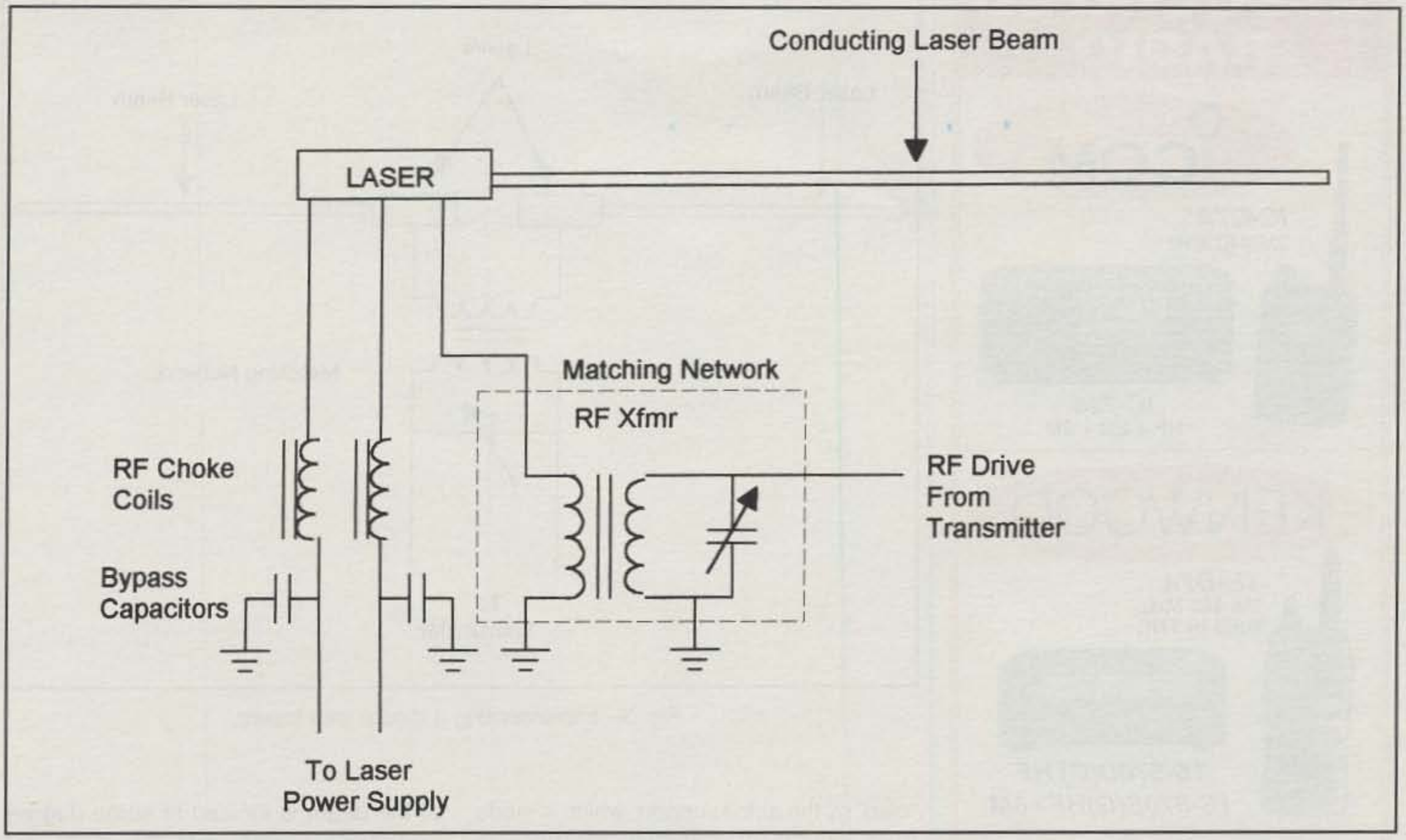

Fig. 2– Using a laser beam as an antenna. Note that the laser is isolated (for RF) from ground.

Well, in keeping with the spirit of things, this month we have a couple of very unique state-of-the-art solutions for such problems that come about as an outgrowth of space research. When you consider these, you quickly will see that the billions of dollars spent for space research and related sciences is well worth it.

First, if you must erect a vertical support of any type, you have to consider the problem of wind loading. Even a simple 30 foot mast can easily be toppled by 60 to 100 mph winds. A possible solution to the wind problem is the technique suggested by NASA and shown in fig. 1. The mast is surrounded by an airfoil attached to a length of PVC tubing that is free to turn around the mast. From high school physics we know that when air flows around an airfoil, it produces lift. When the airfoil is placed horizontally, it is called a wing and the lift produced is why airplanes are able to fly. When the wind blows on the vertical airfoil of the NASA design, the sideways "lift" that is produced is divided equally in both directions, with the result that most of the load is removed from the mast itself.

In the design the mast is divided into three sections. Each section is connected by a plate that acts both as a bearing and as a tie point for guy wires (which are still recommended). The mast is then

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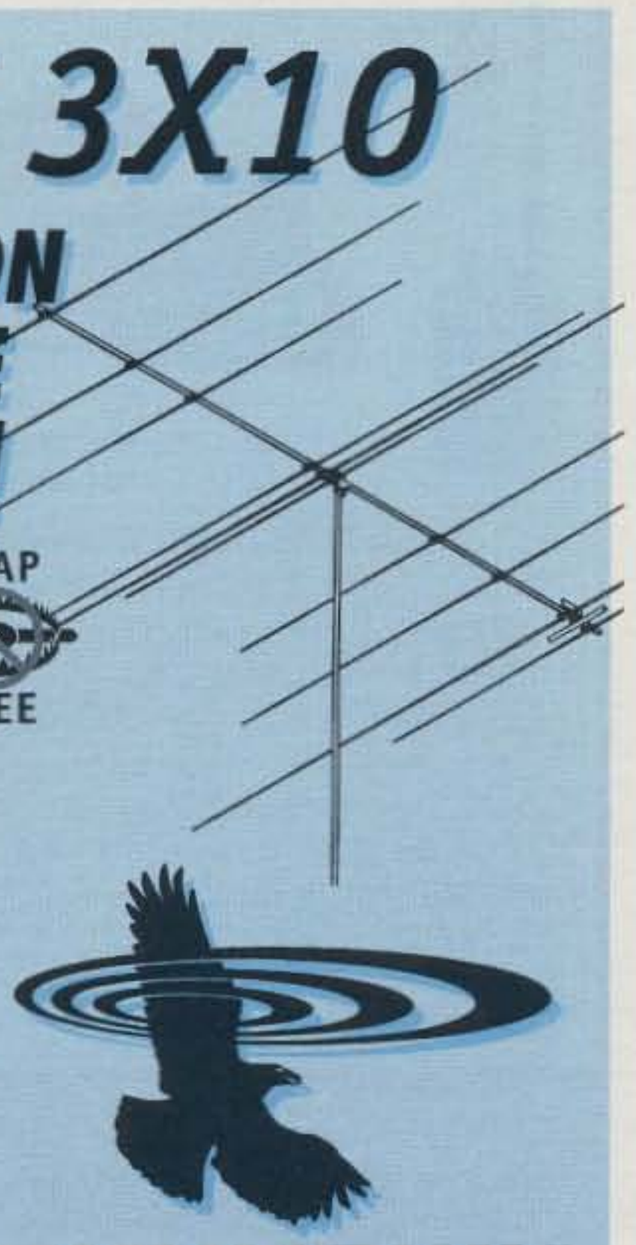

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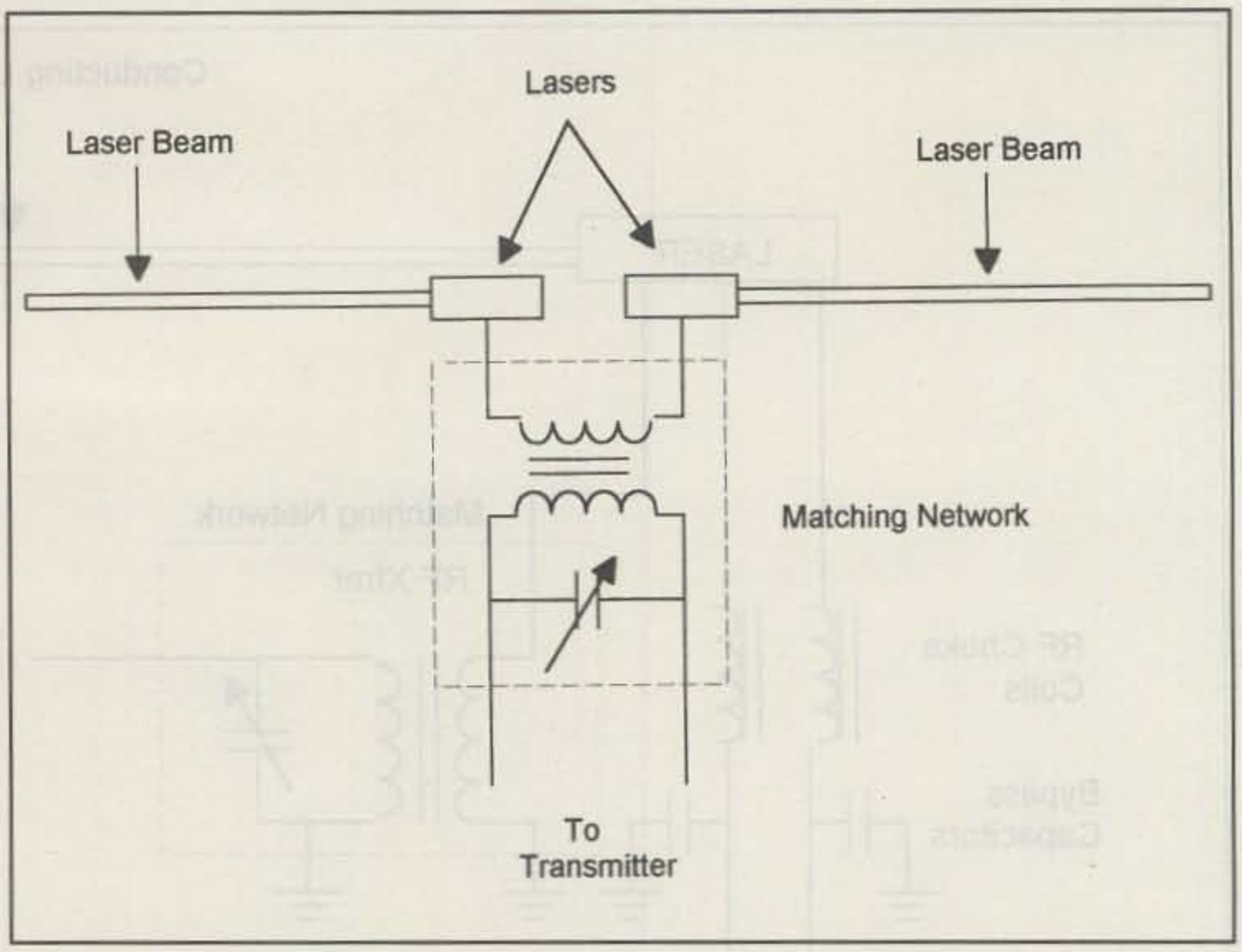

Fig. 3– Implementing a dipole with lasers.

"clad" by the airfoil support, which is made from lengths of common, inexpensive PVC pipe obtained from the local plumbing supply center. The pipe is chosen so that it is a loose fit around the mast. Each end of the pipe is then fitted to bearings that allow it to turn freely around the mast. If you can get some large-diameter surplus ball bearings, the bearing surface will be easy to implement. If not, a lazy susan bearing assembly or garage-door roller wheel might be able to be modified to achieve the same result. Whatever bearing method you use, however, be sure that it allows the PVC pipe to turn freely so that it can easily orient itself with the wind.

The airfoil itself can be fabricated from fiberglass, solid PVC material, or any other reasonably lightweight material that can be filed or cast into the required shape. According to the NASA report, when such an assembly is implemented, it can reduce the drag of the mast to the oncoming wind by a factor of up to three times. This means that a 100 mph hurricane can become the equivalent of a 30 mile breeze! A neat idea, huh?

Now suppose that erecting a mast is simply not in the cards. If you can obtain a reasonably high-power laser, you will not need towers, masts, wires, or for that matter any typical antenna material. If you have seen a laser beam in a light show, you will notice that it is visible because of the various dust particles in the air that reflect it. This is true, but another factor also comes into play. The air in the path of the beam is ionized to some degree. The more power from the laser, the greater the degree of ionization. As we all know (again from high school physics), ionized air conducts. Therefore, the laser beam is a conductor over its entire length with the greatest conductivity at the source (laser) and the least at the end of the beam. So what we have is a long conductor when the laser is on.

Fig. 2 is a way of using this conducting beam as an antenna. You just have to match the length properly, but look at what you have—a long conductor that you can position anywhere you want it. Need an end-fed dipole? Position the laser horizontally. Need a vertical? Position the laser vertically. Need to vary the length of of the conductor? Increase or decrease the power output of the laser.

In cases in which you want to implement a dipole, just use two lasers as in fig. 3. Be sure not to aim the laser where it could damage something and observe the usual laser safety precautions. Lasers of the type that are powerful enough to ionize air can also be quite dangerous!

Needless to say, the above techniques are highly experimental and require much tinkering. We would recommend that you carefully study the technique that most closely parallels your needs, and then take the rest of this month to work everything out.

I promise next month we'll get "back to earth" with some more realistic subjects.

73, Irwin, WA2NDM

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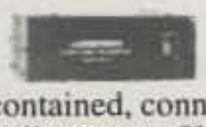

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Premier Communications, the makers of ADI radios, has announced two new VHF handhelds: the PR-52 for 6 meter FM and the PR-222 for the 222 MHz (1.35 meter) band. Both are palm-sized radios with rugged metal chassis and a full 5 watts of RF output. The PR-52 features wide band receive from 40.0 to 53.995 MHz, plus full 6 meter amateur band transmit from 50.0 to 53.995 MHz, and can be modified (with proper proof of license) for MARS operation as well. The PR-222 covers the U.S. 222 to 225 MHz band and is expandable for the Canadian ham band and MARS use (with proof of license). Standard features on each radio include a rechargeable NiCd battery, built-in CTCSS encode and decode, 40 memory channels, direct frequency entry from the 16-button keypad, and programmable repeater shift (default: 500 kHz on 6 meters; –1.6 MHz on 222).

The radios measure 4.25"H × 2"W × 0.75"D inches, excluding battery pack. Both feature Premier's two-key programming system. Unlike other handhelds, on which each of the 16 keys are assigned functions and subfunctions, all of these radios' main functions (such as CTCSS and repeater shift) are set using just two keys. Use the "Select" key to access the item you want to program and the "Change" key to modify it.

For more information contact Premier Communications Corporation, 480 Apollo St., #E, Brea, CA 92821 (714-257-0300; fax 714-257-0600; Web: <http://adi-radio.com>; e-mail: <premier@adi-radio.com>), or circle number 114 on the reader service card.

New AC Capacitor Groups From Ventronics

A broad variety of class "X-2" metallized polypropylene film capacitors, along with class "Y" ceramic capacitors, both with international safety approvals for AC applications, are available from Ventronics, Inc. The "X-2" units are designed for interference suppression and general applications, and are suitable for conditions where capacitor failure will not expose individuals to shock. The "Y" types are ideal for line bypass and general uses, especially in settings in which users could be exposed to shock if units are improperly utilized.

Rated voltages for the "X-2" units are 250/275 VAC with 1200 to 1500 VAC maximum ranges and with 0.0047 to 1.0 µF capacitance ratings. They feature flame retardant cases and are "self-healing," with wound polypropylene film dielectrics. The "Y" types are rated at 1250 AC, 2500, and 4000 VAC maximum ranges and with 100 pF to 10,000 pF capacitance ratings. Dielectric strength is 2600 VAC for 60 seconds.

Prices start at 12.5¢ each (bulk) for "Y" capacitors and at 25¢ each for "X-2" units, depending upon ratings. For more information, contact Ventronics, Inc., 346 Monroe Ave., P.O. Box 142, Kenilworth, NJ 07033 (908-272-9262; fax 908-272-7630; e-mail: <ventronics@prodigy.net>), or circle 116 on the reader service card.

MFJ-259B SWR Analyzer

MFJ has added many new features to its MFJ-259 SWR Analyzer. The new MFJ-259B gives a complete picture of your antenna's performance. You can read antenna SWR and complex impedance from 1.8 to 170 MHz. The MFJ-259B has a built-in frequency counter, side-by-side SWR and complex impedance meters, and smooth reduction drive tuning. Using it is easy: set the bandswitch and tune the dial. SWR and complex impedance are displayed instantly.

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The MFJ-259B also serves as a complete amateur radio test station, including frequency counter, RF signal generator, SWR Analyzer™, RF resistance and reactance analyzer, coax analyzer, and

capacitance and inductance meter.It's portable and can be used at remote sites, up towers, or on DXpeditions. It uses 10 AA or NiCd batteries (not included) or 110 VAC with MFJ-1315 ($14.95). Its rugged, all-metal cabinet is 4" × 2" × 6¾".

The MFJ-259B is priced at $249.95. A free instruction manual is available. For more information, contact MFJ, P.O. Box 494, Mississippi State, MS 39762 (800-647-1800; e-mail: <mfj@mfjenterprises.com>; Web: <http://www.mfjenterprises.com>, or circle number 115 on the reader service card.

"ARRL Antenna Book CD"

The ARRL Antenna Book CD 1.0 includes the full text of the 18th edition of the printed *Antenna Book*, along with all of the drawings, tables, illustrations, and photographs contained in the print edition. Also, the CD contains the companion software that's provided on diskette with each printed book, plus 70,000 pages of propagation tables, covering propagation from 40 parts of the U.S. and more than 100 other locations around the world. It also includes the print version's chapters on VHF/UHF antennas, satellite antennas, and direction-finding antennas, among other topics of interest. The CD also includes copies of Adobe "Acrobat Reader" and the "Acrobat Search" search engine to let you quickly find what you're looking for. It's suitable for use with either Windows or Mac operating systems.

The ARRL Antenna Book CD 1.0 is $39.95 plus shipping and is available from the ARRL, 225 Main St., Newington, CT 06111 (orders only 888-277-5289 or 860-594-0355; fax 860-594-0303; Web: <http://www.arrl.org>), or circle number 111 on the reader service card.

AOR AR7000B DSP Receiver

AOR USA's new AR7000B receiver covers 100 kHz to 2 GHz (minus cellular frequencies on U.S. model). Modes received by the AR7000B include WFM, NFM, AM, LSB, USB, and CW. There are two VFOs and 1500 memory channels (15 banks of 100 channels). Banks and channels can have alphanumeric identifies of up to seven characters. The operator can scan selected or all memory banks. The AR7000B can also shift the IF plus or minus 8.5 kHz in 100 Hz steps. Tuning steps, AGC, receiving mode, and bandwidth can operate automatically or be overridden by the operator. The color display shows several different pages of information, and the video can also be output to an external monitor via a composite video jack on the rear panel. The AR7000B also includes a calendar and clock, with a capacity for maintaining time in UTC and up to four additional time zones. The unit can be programmed to turn on and off at preset times.

Free software for computer programming and control of the AR7000B may be downloaded from the AOR Web sites at <http://www.aorusa.com> or <http://www.aorja.com>. For additional information, contact AOR USA, Inc., 20655 S. Western Ave., Suite 112, Torrance, CA 90501 (310-787-8615; fax 310-787-8619), or circle number 117 on the reader service card.

Bird Conduction-Cooled RF Dummy Loads

Bird Component Products, a division of Bird Technologies Group (the folks who make the Bird wattmeters), has introduced a line of conduction-cooled RF dummy loads for use from DC to 2.4 GHz, at power levels of up to 500 watts. The user has to supply a heatsink or "chill plate." The new CT series of RF loads is built entirely of non-magnetic materials, which minimizes third-order intermod signals. Most models are available with a choice of BNC, IEC 7/16, N, SMA, or TNC connectors.

For more information, contact David Distler, Product Line Manager, Bird Component Products, 50 W. Jefferson St., Franklin, IN 46131 (317-346-6600; fax 317-346-6601), or circle number 107 on the reader service card.

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CIRCLE 37 ON READER SERVICE CARD

BY KARL T. THURBER, JR., W8FX

THE DIGITAL DIPOLE

FROM SOFTWARE THROUGH ANTENNAS FOR THE SHACK

From The Notebook—Part III

This month we'll again open the "Digital Dipole" notebook for a potpourri of antenna and book topics, as well as an interesting "short burst" relating to mine safety. We'll kick things off this time by first opening the notebook to antennas.

Antenna Notes

One-Sixty Meter Balloon Antenna Kit. One-sixty, the "top band," would be a much more popular amateur band if it weren't so darned difficult to erect an effective antenna for the band. A 160-meter balloon vertical can possibly provide the answer to the question of how to launch a workable antenna for the band.

The good news is that a quarter-wavelength, 160 meter balloon vertical antenna kit is available from Ronald Chudy, WA7UQV. Ron is well-known in top band circles for his many years of experience in flying balloons as antenna supports.

Ron's kit consists of a 4 ft., heavy duty, long-necked balloon; a swiveled "driven element" wire that's 128 ft. 6 in. long; four radials of the same length as the driven element; an RG-8 pigtail section w/PL-259 connector and barrel; electrical tape; guy line; powder; a manual; and other necessary items. (To round out your balloon antenna project, you'll also need a small canister of helium, which should be available at balloon shops.)

The cost of the kit is $55 plus $5 UPS shipping. It's available from Ronald Chudy, WA7UQV, 3324 North 7th Street, Tacoma, WA 98406 (253-752-7817;. e-mail: <wa7uqv@mci2000.com>. *(Note:* In addition, you also can find balloon construction discussions on the net at <http://www.contesting.com/_topband/9612/index.html#428> and at <http://www.coulee.com/ka9fox/balloon_vertical.txt>. Also note the commercial Balloon Innovations website, which you will find at <http://www.1balloon.com>.

There seems to be very little print literature on balloons for amateur radio. However, there are balloon and kite-supported antenna articles in the *ARRL Antenna Compendium,* Vol. 2, published in 1989. It's still available from the League for $14 plus $4 s/h (contact the American Radio Relay League, Inc., 225 Main St., Newington, CT 06111-1494 (1-888-277-5289; e-mail: <pubsales@arrl.org>; Internet: <http://www.arrl.org>).

New Gladiator Phoenix/Special Vertical. Bob Myers, W1XT, offers a line of single- and multi-band vertical antennas for 160 through 10 meters, which he calls the Gladiator series. The antennas are available in several configurations, and they're promoted as heavy-duty, efficient, low-angle DX radiators.

The Gladiator single-band vertical antennas give true monoband performance; for 160 and 80 meters, you can choose from either center-loaded (CL Model) or top-loaded (TL Model) Gladiators. Antennas for 40, 30, 20, 17, 15, 12, and 10 meters are full-size, quarter-wavelength groundplane configurations. All antennas can be either ground-mounted or elevated.

TripleBanders™ also are available for the three WARC bands (30, 17, and 12 meters), as well as for 20, 15, and 10 meters. The newest Gladiator, celled the Phoenix/Special, now is available, being intended for high-performance use on 160 and 80 meters. The top-loaded antenna uses very high-Q traps and high-voltage capacitors, and it claims high efficiency. The resonant frequency is adjustable within each band. Radials are required, either full-size or in the form of the new Eighth Wavelength Tuned Radial System™ (EWTRS), an electrically shortened raised radial system using only one inductor. The Phoenix/Special Gladiator is $429.90 and the EWTRS is $79.95 for the inductor and mounting hardware, plus the cost of an appropriate radial kit.

Contact R. Myers Communications, L.L.C., 37875 N. 10th St., Phoenix, AZ 85027 (602-465-0936; e-mail: <bmyers@primenet.com>; web: <http://www.primenet.com/~bmyers>).

Bilal Isotron Update. Do physically small antennas work just as well as their full-size counterparts? Usually not, in the real world, but properly designed, they can indeed work. Smaller HF antennas mean that you often can operate successfully in difficult locations and situations where larger antennas are impractical or impossible to install.

The Bilal Company is a small antenna manufacturing firm, active since 1975, which produces the Isotron antennas. According to proprietor Ralph Bilal, WDØEJA, he began marketing the compact antennas for those with space restrictions and those who were looking for "something different" in their antenna systems.

The antennas, which some have characterized as resembling "futuristic bird feeders" because of their unusual appearance, are actually compact, horizontally-polarized HF antennas. The Isotrons, which require no tuner or radials, are designed for portable and restricted-space applications. As such, they lend themselves well to emergency, Field Day, motel, maritime, and similar use where large antennas are out. Construction is of tempered aluminum, PVC, and cast acrylic, with stainless-steel fasteners. Back-to-back mounting for multiband use is possible. Single-band Isotrons are available for 160 through 10 meters, including individual units that cover the 15, 17, 12, or 11 meter bands. The antennas range in price from $59.95 to $159.95, depending on band. The newest Isotron is an improved, heavy-duty 160 meter model, the Isotron 160C, priced at $159.95; it has 900 sq. in. of "capture area." The antenna features more consistent bandwidth and easier tuning than previously.

Also available are several combo models that allow two- or three-band operation with a single feedline. They include the 80/40 combination, which covers both 80 and 40 meters ($159.90); and a 10, 15, and 20 meter three-bander ($179.95).

Ralph's ads say he's glad to help you with your antenna installation. For more information, contact the Bilal Company, 137 Manchester Drive, Florissant, CO 80816 (719-687-0650; web: <http://www.catalogcity.com>).

New RF Parts Catalog. RF Parts stocks a wide variety of often difficult to find RF components. The components offered include transmitting tubes; surface-mount parts kits; SWR bridges and wattmeters; RF connectors and switches; RF power and other transistors; RF power modules; epoxy-dipped coils; several types of fixed and variable capacitors; RF chokes; filters; tube sockets, chimneys, and plate caps; vacuum, coaxial, and special-purpose relays; heatsinks; technical, service, and owner's books and manuals; and much more.

One of the highlights of the RF Parts catalog is their wide assortment of increasingly expensive and scarce trans-

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Say You Saw It In CQ

mitting and receiving tubes; these occupy seven pages. Included are custom and standard types from Amperex, Eimac, Svetlana, Taylor, and several other manufacturers, including Chinese sources. Also offered is the company's own premium in-house "RFP" brand of tubes.

Two pages of receiving tubes, including hard-to-find sweep tubes, are featured. Several tube and transistor books, including the popular *RCA Receiving Tube Manual* and the *RCA Transmitting Tube Manual*, plus the *Tube Substitution Handbook*, are offered.

For a free catalog, contact RF Parts Company, 435 South Pacific Street, San Marcos, CA 92069 (1-800-737-2787; e-mail: <rfp@rfparts.com>; web: <http://www.rfparts.com>). (The well-designed RF Parts Website also includes an online catalog as well as a "what's new" section that announces new products stocked by the company.)

From the Bookshelf

Amateur Radio Trader Now Online. Amateur Radio Trader®, which bills itself as "The Ham Radio MarketPlace™," includes both display ads and classifieds in about 280 headings. The publication is issued twice-monthly, so it's very up-to-date in terms of pricing and product availability. The classifieds are quite inexpensive at 50 cents per word for publication in two consecutive issues.

Recently, the magazine joined the online world with an excellent website. The new site allows you to search the hundreds of classified ads found in each issue, locate items worldwide, study helpful guides, plan for upcoming hamfests, and link to interesting amateur-oriented websites. One-year subs are $14.95 by third-class mail, or $34.95 via first-class. Contact Amateur Radio Trader, P.O. Box 3729, Crossville, TN 38557 (1-800-774-2623; e-mail: <subs@amradiotrader.com>; web: <http://www.amradiotrader.com>).

CRB Research Now Online. From the variety of correspondence I receive as editor of this column, I'm always surprised by the number of radio amateurs who also are shortwave listeners (SWLs), scanner enthusiasts, CBers, amateur spies, law enforcement wannabes, computer hackers, computer security specialists, private investigators, and the like.

CRB Research Books, which has been around since 1967, includes among its titles books catering to this rather eclectic audience—more so than most other radio hobbyist booksellers. While it's true that most of the books they distribute are about conventional radio and electronics topics, many books are rather offbeat and serve much more than just electronics hobbyists. Their catalog is quite interesting, and now they're online with their catalog at <http://www.crbbooks.com>.

The new 1998/1999 printed catalog, for example, includes more than a few of these unusual titles, such as *Net Spy*, by Michael Wolff, subtitled "How You Can Access the Facts and Cover Your Tracks Using the Internet and Online Services"; Dave Ingram's *Guide to Emergency Survival Communications;* and Capt. B. L. Cathie's *The Energy Grid*, to name a few.

The 1998/1999 catalog is $3 from CRB Research Books, Inc., P.O. Box 56, Commack, NY 11725 (516-543-9169; e-mail: <sales@crbbooks.com>;. web: <http://www.crbbooks.com>. The catalog includes a 10 percent savings certificate, and the website also lets you access several "Webrings" of hobby info, where you can contact other amateur radio, scanner monitoring, and CB radio hobbyists and visit their web-based home pages.

Several New Computer Books from Macmillan Publishing USA. Recently, I bought a snazzy Dell Windows 98-equipped desktop PC, one with all the requisite bells and whistles. It effectively replaced my aging Gateway 486 with its now rather dated hardware and software complement. In previous columns, I mentioned several excellent and very welcome Windows 98 tutorial and reference books I acquired for review from Macmillan Publishing USA.

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CAROLINA BEAM 80,	80-10m,100' long.Powerful	$105.95
CAROLINA WINDOM 160,	160 -10m, 252' Big Bang	$119.95
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B4-1KXV	4:1	1 KW	15 - 2 m	VHF Current Balun	$29.95
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T-6	VHF version of T-4 15 - 2 meters, 1 KW	$25.95
4K-LI	Line Isolator, SO-239 in and out	$21.95

April Specials

PL-259	Silver & Teflon	$1
RG-8X	Premium, 95%	13¢
RG-213	Mil-type, 95%+	33¢

Antenna Wire and Parts

PL-259ST	Silver-Teflon, USA SALE	$1.00
PL-259GT	Gold-Teflon, USA	$1.49 or $30/pk of 25
N/9913	For 9913, 9086, Flexi, etc.	$3.25
N/9913S	As above but Silver & Teflon	$4.25
N-200	'N' Silver-Teflon, installs like PL-259	$3.00
	Coax & Cable Prices	<100'/100'+
RG-8X	Premium grade, 95% braid, SALE	19¢/13¢
RG-8X Plus	95% shield, type IIA non-contaminating	26¢/22¢
RG-213 Plus	Enhanced, 96%+ super jacket	45¢/38¢
RG-213	Top Quality, 95% Sale on 100' or more	33¢
ExtraFlex	Flexible, 9913 type	57¢
R1 Rotator	8 conductor (2 x #18, 6 x #24) SALE	26¢/20¢
R2 Rotator	8 conductor (2 x #16, 6 x #18) SALE	47¢/35¢
#14 HD	Stranded, 7 x 22 hard-drawn	8¢
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450 Ladder	#16 stranded cond, windows SALE	22¢/16¢
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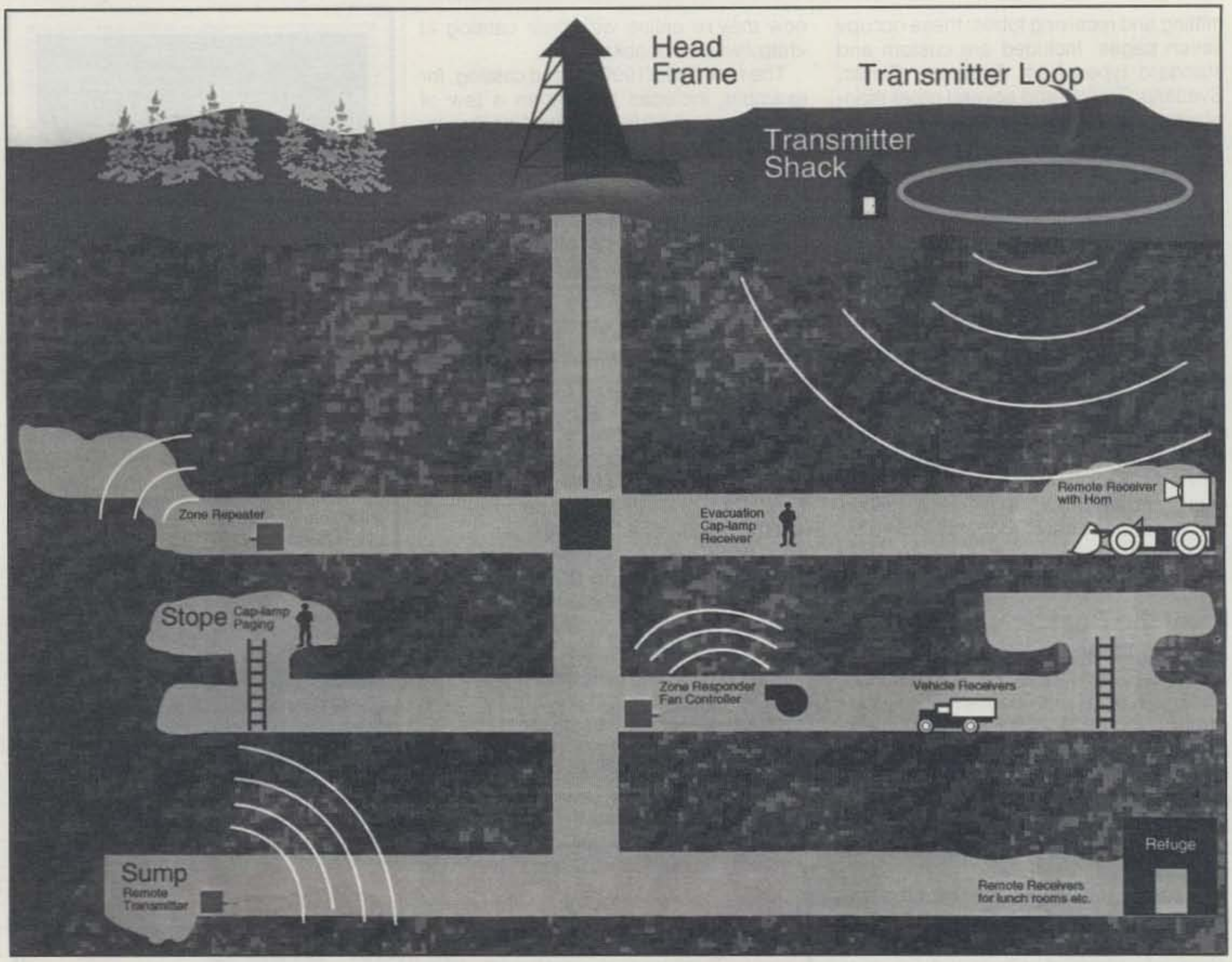

Fig. 1– The MineAlert™ technology described in the column involves a transmitter loop antenna on the surface of the mine. The transmitter typically sends a modulated signal in, roughly, the 2 to 9 kHz range that creates a magnetic field around the entire mine and radiates a signal that penetrates the underground region. No matter how deep or how remote you are in the mine, the signal will find you, even if it has to go through rock to do so. (Illustration courtesy MineAlert)

As I mentioned, the included documentation for the operating system provided by Microsoft® and the PC vendor is somewhat limited, so such books offer an all-in-one-place source of basic, just-what-you-need-to-know information in readable hardcopy form to productively use the Windows 98 operating system.

Another particularly useful book that I received recently is Jim Boyce's *Microsoft® Windows 98 User Manual*, which is impishly subtitled "The Manual You Should Have Received with Windows 98." The 528-page, Que®-imprint book, which sells for $19.99, is a clear, to-the-point reference with complete coverage of all the features most users care about. Best of all, it's a real book, and not just a computer help file!

Also in a recent column, I mentioned the need to obtain printed "how-to" documentation for any software you have bundled with your PC—something usually lacking at the bargain price you pay for the software. For example, I could have had Microsoft Home Essentials software or Microsoft Office 97 Small Business Edition software bundled with my PC, and I opted for the latter. The Office 97 software contains a variety of applications, notably Microsoft Word, Excel, Outlook, Publisher, Expedia Streets, Small Business Financial Manager, and sometimes other related applications. It's serious software for people with business-usage orientation, but the documentation is online, stressing the need for some form of printed docs. Thus, I'd like to note two excellent Que-imprint texts that fill the bill. Easiest to use is Sherry Kinkoph's *Easy Microsoft® Office 97 Small Business Edition*, a 227-page, full-color "see it done, do it yourself" type of book priced at $19.99. More depth is found in Tom Barich's *Using Microsoft® Office 97 Small Business Edition, Updated Version*, a 700-page thorough reference priced at $29.99.

If you're like me, your main focus is on the wordprocessing part of Office 97, so you might check out two additional texts on Word 97. The first is Que's *Using Microsoft® Word 97, Third Edition*, by Jane Calabria, a 617-page reference priced at $29.99.

Second, for a "just tell me what I need to know" approach to learning Word 97, there's the Sams *Teach Yourself Word 97 in 10 Minutes*, by Peter Aitken; it's just 214 pages and costs $12.99.

Check out these books in your local bookstore, or contact Macmillan Publishing USA, 135 South Mount Zion Road,

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Short Bursts

MineAlert "Through-Rock" Signalling and Warning System. Mine and cave communications present interesting technical challenges. Such communications are of great importance to mining firms, with their critical need to communicate reliably with the surface. The problem is that radio signals at "conventional" frequencies are absorbed by solid rock and so are not very suitable for communication between mines or caves and the surface of the earth. Since conventional radio is of limited use underground, special techniques must be used. Low-frequency radiation and induction is an alternative approach to underground communications.

As the frequency is reduced, absorption by rock also is reduced, and signals in the ultra low frequency (ULF), extremely low frequency (ELF), and very low frequency (VLF) ranges can be used productively for "through-rock" radio. Unfortunately, a radio antenna needs to be of a length that's a significant proportion of a wavelength. Appropriately long antennas are impractical to use in small passages, so short, compact antennas, often loops, typically are employed.

In response to my two-part article in January and February 1998 *CQ*, "Longer Than Longwave," Bob Yewen, Director of Research and Development for MineAlert, a division of TeleMagnetic Signalling Systems International™, sent me information on the work they're doing at MineAlert. It's quite interesting.

The MineAlert™ "Through-Rock" Signalling and Warning System (fig. 1) involves a transmitter loop antenna on the surface of the mine with a console control panel. The transmitter sends a modulated signal in, roughly, the 2 to 9 kHz range that creates a magnetic field around the entire mine and radiates a signal that penetrates the underground region. No matter how deep or how remote you are in the mine, the signal will find you, even if it has to go through rock to do so. This is important in the event there is a safety problem such as a rock burst or a cave-in.

The MineAlert cap lamp receivers, upon receiving a signal, will flash the cap lamp, alerting the miners to vacate all areas in the mine. Other important features include a paging module that flashes the cap lamp in a recognizable pattern, as well as a man-alone "motionless detector" that can signal when a lone miner is stationary for a preset period of time. Recently the firm developed the capability to both send and receive signals back and forth from the surface to the underground, so that a person working alone who is in distress can simply depress a button on his unit to request help.

The interesting technology was developed by MineAlert, a division of TeleMagnetic Signalling Systems International, 139 Main Street, Suite 203, Unionville, Ontario L3R 2G6 Canada (1-800-661-6803). Their primary market at present is in the mining industry, but they have plans to branch out into other areas.

Wrap-Up

That's all for this time, gang. Next time, more Digital Dipole topics of current interest. See you then.

Overheard: When you come right down to it, there's just one person in this world that you can improve, and that person is yourself.

73, Karl, W8FX

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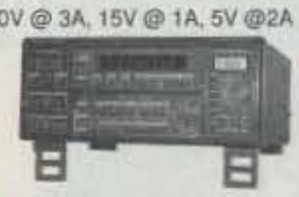

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ALL ABOUT THE WORLD ABOVE HF

King Hussein, JY1, Silent Key

"I recall in discovering past events over many years, and one thing that remained with me throughout those many years was a total commitment to the cause of peace. We quarrel, we agree; we are friendly, we are not friendly. But we have no right to dictate through irresponsible action or narrow-mindedness the future of our children and their children's children. There has been enough destruction. Enough death. Enough waste. And it's time that, together, we occupy a place beyond ourselves, our peoples, that is worthy of them under the sun, the descendants of the children of Abraham." So said King Hussein, JY1, on October 23, 1998.

On February 7, 1999, Hussein became a Silent Key, thus ending an era that lasted for more than 47 years. The monarch was the Middle East's longest reigning ruler, taking the throne when he was just a teenager. His son, Abdullah, 37, has succeeded him.

During his long reign, Hussein earned a reputation as a catalyst for peace and as a conciliator in the Middle East. It was a long road for him, as the above quote indicates. In the end, however, his reputation was solidly intact, thanks in large part to his agreeing to a peace treaty with Israel in 1994.

Hussein came to amateur radio in the 1960s. Both Bruce "Blackie" Blackburn, W4TA/JY9BB, and *73* magazine founder and former *CQ* magazine editor Wayne Green, W2NSD, did much to influence Hussein in his early years in the hobby. According to Bill Pasternak, WA6ITF, it was Green who guided Hussein in writing the Jordanian Amateur Radio regulations.

Even in his hobby, Hussein was able to reach across the spectrum. He was a life member of the ARRL. In his eulogy, ARRL Executive Vice President David Sumner, K1ZZ, called him "an enthusiastic radio amateur whose support was invaluable to us in obtaining new amateur bands at the 1979 World Administrative Radio Conference." In a press release by the League, Sumner recalled that in May 1979, International Amateur Radio Union President Noel Eaton, VE3CJ, was invited to Amman to meet with King Hussein.

"Jordan's support of the Amateur Service was much in evidence at the conference that fall, and was a crucial element in our success," stated Sumner. It was via the WARC-79 conference that amateur radio gained the 30, 17, and 12 meter bands. It was also in that year that JY1 was featured in the League's film *The World of Amateur Radio.*

Hussein was no stranger to the VHF+ amateur bands. He deemed his 1983 VHF QSO with Owen Garriott, W5LFL, on board the Space Shuttle *Columbia,* as a high point in his amateur radio activity. A record of that contact was made by Dave Bell, W6AQ, and it was subsequently used in the League's 1987 video *The New World of Amateur Radio.* King Hussein also was involved with the early satellite experiments.

King Hussein also participated in the historic 1995 joint Israel-Jordan JY74X operation on Mt. Nebo, where amateurs from both countries participated in a Field-Day-like operation. During the operation the king operated briefly from the station, creating a massive pile-up in the process.

In its press release, the League quoted Bruce "Blackie" Blackburn, W4TA/JY9BB, of St. Petersburg, Florida, who called his friend "one of the world's most respected amateurs" and recounted many stories about King Hussein as a person and an avid amateur radio operator. "He was a wonderful guy, interested in everything and everyone," he said.

According to Blackburn, "[King Hussein] promoted amateur radio to the hilt in Jordan ... " and saw to it that amateur radio classes were instituted in elementary schools." He also pointed out that King Hussein would occasionally drop in on meetings of the Royal Jordan Radio Amateur Society in Amman.

According to the League, Hussein had been active in recent months from the US while seeking cancer treatment at Minnesota's Mayo Clinic. A QSO with JY1 was considered by many amateurs to be both an honor and a privilege. His elegant QSL card was prized. AMSAT Area Coordinator Bruce Paige, KK5DO, in Houston, worked JY1 while the king was in the US last summer. "That was a very exciting moment for me," he said. Paige has posted a copy of the king's QSL card on AMSAT's home page.

Pat Kilroy, WD8LAQ, related that during a three-minute contact on 20 meters with King Hussein in the fall of 1995, in which the king was traveling aeronautical mobile enroute to the United Nations, he insisted on Pat addressing him simply as "Hussein." Quoting Pat: "In one of the oldest traditions in amateur aadio, Hussein upheld that this kinship transverses not only age and nationality, but also between citizen and head of state."

According to the League, "All members of the Jordanian royal family automatically have amateur radio privileges in Jordan. Although the new king does not appear to have a call sign, King Hussein's widow, the American-born Queen Noor, is JY1NH. King Hussein's brother, the former Crown Prince Hassan, is JY2HT, while his cousin, Prince Raad, JY2RZ, is chairman of the Royal Jordan Radio Amateur Society."

The following is courtesy of Newsline February 12, 1999 (report number 1122) and is used with permission from and a great deal of gratitude to Bill Pasternak, WA6ITF.

From Roy Neal, K6DUE, "Amateur Radio has joined the world in mourning the passing King Hussein, JY1. Alan Kaul, W6RCL, reports on the death of this legendary world leader whom many amateurs had the chance to meet on the air.

"A voice revered by radio amateurs around the world has fallen silent. King Alhussein Ibn Talal has succumbed to cancer at age 63. The man who would become the Middle East's longest reigning monarch was born on No-

VHF Plus Calendar

Apr. 4	Poor EME conditions.
Apr. 8	Last quarter Moon.
Apr. 9-10	Southeast VHF Society Conference. *See text for details.*
Apr. 11	Moderate EME conditions.
Apr. 12	144 MHz Sprint Contest. *See text for details.*
Apr. 15	New Moon.
Apr.l 16	Moon perigee.
Apr. 18	Moderate EME conditions.
Apr. 20	222 MHz Sprint Contest. *See text for details.*
Apr. 21	Highest Moon declination.
Apr.l 22	First quarter Moon.
Apr. 23	*Lyrids* meteor shower predicted peak.
Apr. 24-25	West Coast Weak Signal Group Conference; Ontario Contest. *Seetext for details.*
April 25	Good EME conditions.
April 28	432 MHz Sprint Contest. *See text for details.*
April 30	Full Moon.

**EME conditions data courtesy W5LUU.*

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Say You Saw It In CQ

vember 14, 1935 in Amman to a dynasty tracing to the Prophet Mohammad. His great-grandfather, Sharif Hussein bin Ali of Mecca, was a leader of the 1916 British-backed Arab Revolt against Ottoman rule.

"But modern Jordan wasn't created until after World War II when Hussein's grandfather, Abdullah, became king. On July 20, 1951 King Abdullah was killed by an assassin's bullet as he was at the entrance to Al-Aqsa mosque in Jerusalem.

"His killer was a Palestinian who was angry at King Abdullah's perceived collusion with Israel in the dissolution of Palestine. Standing by his side was then fifteen-year-old Hussein. Official biographies say a bullet was deflected by a medal over his heart. That was the first of many assassination attempts he escaped in his almost five decades as ruler of Jordan.

"Hussein came to power after his father, Talal, was declared mentally unfit to rule. It would be more than a decade before amateur radio would become a part of the king's life. Just where his interest was piqued to become a ham is obscure. But at least some of the credit goes to Bruce Blackburn, W4TA, who was an early communications adviser to the king. According to biographers, during the 1967 Arab Israeli War, JY1 was on the air speaking to ham friends about his day at the front. Some of those conversations were monitored in Israel."

Here are recollections of the early days of radio in Jordan from one of JY1's early ham radio friends, *73 Magazine* founder Wayne Green, W2NSD:

"I spent two weeks at the king's palace—operating ham radio—and we stayed up all night some nights and we had a wonderful time.

"He was a lot of fun to be with. For instance; he would come back in the afternoon and would say, ' . . . how is the ham radio business?'

"I would answer that it's doing great. I would then ask him how the King's business was. He would say 'not so good.'"

Continuing Roy Neal, K6DUE:

"King Hussein was always a leader that was willing to listen to any idea that would positively impact on the people of his nation. And Green takes credit for convincing JY1 that ham radio could impact the future for Jordan."

Quoting Green: "I said that I think the best thing you can do is to get ham radio clubs going in your schools and get kids interested in Amateur Radio. So he held a meeting of his cabinet where I explained the situation to them. And it did not hurt that King Hussein was sitting there and said, 'It shall be so.'"

Continuing Neal: "Over the years JY1 became of the most sought-after ham radio contacts on any band. During his travels around the world on delicate diplomatic missions, it was not all that unusual to have King Hussein show up on a repeater to simply chit-chat with local hams. And when he was at home, JY1 often seemed to find the time for a QSO.

"Simply said, JY1 was approachable. Ham radio had become an important part of his life and it was not hard to get him to help to promote it.

"Ironically, King Hussein was last heard on the air only a few weeks ago in the United States. He was believed to be operating at or near the Mayo Clinic in Rochester, Minnesota, where he was being treated for the cancer that has now claimed his life.

"And now, that deep voice that became so well known on the ham bands is gone. As a ruling monarch and diplomat, King Hussein left an indelible mark in history. And as a ham radio operator he brought the hobby and the service into a new light.

"Though I never met him personally, I had the pleasure of working with King Hussein some years ago. I was producing several shows The New World of Amateur Radio and Ham Radio in Space. Your Newsline Editor, Bill Pasternak, WA6ITF, plus N6ENV, Frosty Oden, and Alan Kaul, W6RCL, were working with me. We asked the king to participate in each of those videos. In both cases, JY1 came through royally . . . and I use the word quite literally.

"His majesty flew Dave Bell and a camera crew to Jordan. He hosted them at the royal palace and even went on the air . . . on camera . . . to chat directly with Owen Garriott, W5LFL, on the first flight of amateur radio on the space shuttle. In memoriam, I have screened those tapes once again.

"That was, and still is, exciting television. We were exposed to the quintessential amateur radio operator . . . who came across as a very warm human being who was coincidentally a king and a major figure in world politics."

From all of us at Newsline . . . JY1, rest in peace.

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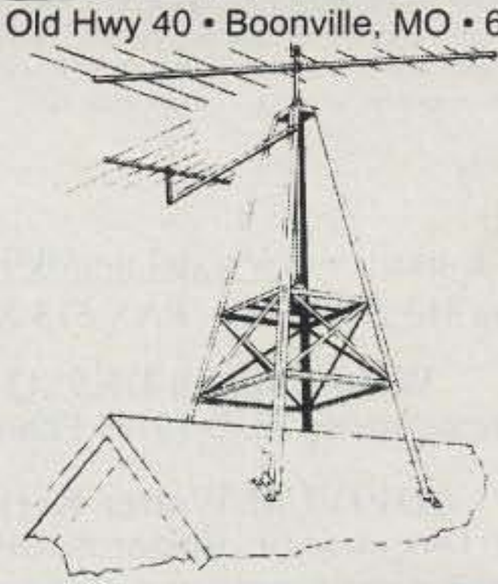

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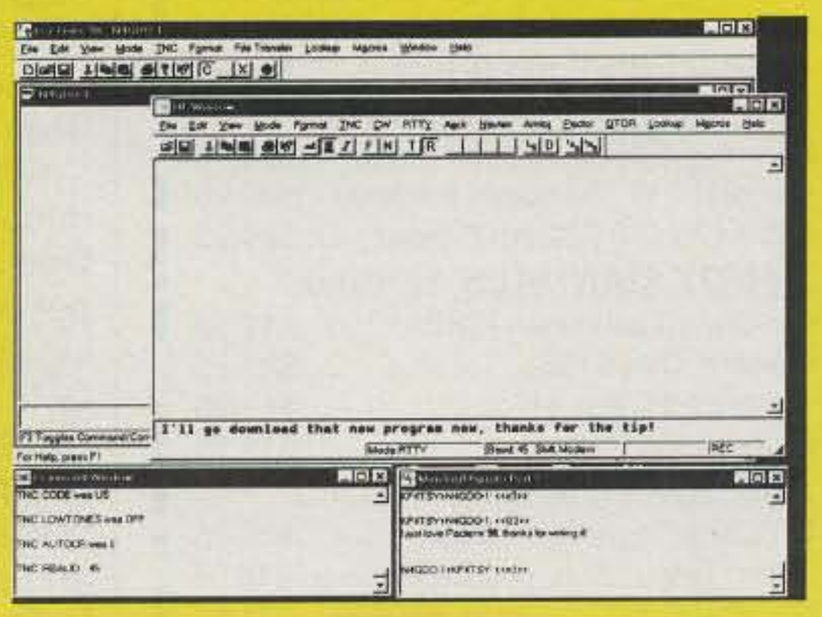

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For more of Newsline's coverage of King Hussein, see their home page, <http://www.arnewsline. org>.

Current Conferences

Southeastern VHF Society, April 9–10. The third annual Southeastern VHF Society conference will be held April 9 and 10, 1999. They will again have preamp noise figure testing, antenna gain measurements, the technical program, a flea-market, vendor displays, a family program activity, presentation of the K4UHF award, the banquet, and door prizes. The conference location is the Atlanta Marriott Northwest in Marietta, Georgia. The hotel rate will be $69 per room single or double occupancy if reserved before March 18, 1999; mention the conference. For reservations, call Marriott at 1-800-228-9290.

The technical program as of February 4 includes the following presentations. (The program chairman has "interpreted" some titles while waiting for updates!): WA4NJP, Ray Rector, on Precise Calibration of Az and El rotors for EME; K5AND, Dick Hanson, on Kenwood TS850's with internal DEM transverters; W2CQH, Reed Fisher, on performance of 45w cell phone amps at 902 MHz and also a 28 to 1296 evanescent-mode waveguide balanced mixer upconverter; W8JI, Tom Rauch, on IMD in linear amplifiers; KB4IDC, Robin Midgett, on the NT4L Rovermobile and multi-band roving; WA8WZG, Tom Whitted (topic TBA); N2CEI, Steve Kostro (topic TBA); W6OAL, Dave Clingerman, on Mobile VHF/UHF horizontal omnis; W4LNG, Ruddy Ellis, on history of noise figure measurements and how to do NF measurements with simple equipment; K4SZ, Bob Lear, on ICOM 730/Ten-Tec 6m transverter interfacing, simple useful mods to the Teletec bricks, and adding transverter ports to HF rigs non-invasively.

The banquet speaker will be Joel Harrison, W5ZN, ARRL VP and avid VHFer.

Antenna gain measurements (2 meters through 1296 MHz and possibly further if time available, maximum of two per band per person) and preamp noise-figure testing (50 MHz–1296 first priority then to 10 GHz if time available) will be done at the conference location before the technical program begins so no one has to miss the presentations. Please register antennas and preamps on your conference registration form to ensure a testing time slot.

Please visit our web site <http://www.svhfs.org/svhfs/> or e-mail to <k4sz@stc.net> or write to SVHFS, P.O. Box 1255, Cornelia, GA 30531 for further information about the conference and a registration form which includes sign up for antennas and preamp measurement as well as the family program and banquet.

Western States Weak Signal Group, April 24–25. The Western States Weak Signal Group will have a get-together on April 24–25, 1999 (with camp-out on the 23rd) hosted by Ron Hammel, K6WLC, and Dale Snider, KØBGL, at K6WLC's "Antenna Ranch" in Ventura County, California. Program will include speakers on laser and microwave communications, an antenna range, potluck barbeque on Saturday night and breakfast on Sunday morning. Talk-in on 144.210 USB and 146.52 FM.

For more info, call 661-245-1009 weekends and 661-942-1312 weekdays.

Current Meteor Showers

This month's real meteor showers are the following: The *Lyrids* meteor shower is active between 19 and 25 April. It is predicted to peak around 0330 UTC on 23 April. This is a north-south shower, producing at its peak around 10 to 15 meteors per hour, with the possibility of upwards of 90 per hour. A minor shower and its predicted peaks this month is: *pi-Puppids* (23 April). The above information is courtesy the International Meteor Organization and their home page at <http://www.imo.net>.

Current Contests

Ironically, with all the hubbub about the ARRL dropping the Spring Sprints, a number of other contests have been scheduled for this month and early next. There are now plenty of opportunities to activate those VHF+ amateur bands. Following are rules for these contests:

The newly sponsored 1999 Spring VHF/UHF Sprints:

1. Object: To work as many amateur stations in as many 2 degrees by 1 degree grid squares as possible, using authorized amateur frequencies on the 50, 144, 222, 432, 902, 1296, and 2304 MHz bands.

2. Contest Period:

2.1. The 144 MHz Sprint will be from 7 PM until 11 PM local time on Monday (April 12, 1999).

2.2. The 222 MHz Sprint will be from 7 PM until 11 PM local time on Tuesday (April 20, 1999).

2.3. The 432 MHz Sprint will be from 7 PM until 11 PM local time on Wednesday (April 28, 1999).

2.4. The 902 MHz, 1296, and 2304 MHz Sprint will be on Saturday (May 8, 1999) from 6 AM until 1 PM local time.

2.5. The 50 MHz Sprint will be from 2300Z Saturday until 0300Z Sunday (May 15–16, 1999).

3. Exchange: Grid-square locator—signal report is optional.

4. Scoring:

4.1. QSO Points: Count one point for each complete QSO.

4.2. Multiplier: The total number of different grid squares worked. Each 2 de-

grees by 1 degree grid square counts as one multiplier.

4.3. Final score: Multiply QSO points by multipliers. Each Sprint is scored separately.

5. Reporting: Logs must be submitted no later than two weeks after the closing of the event.

6. Certificates to the top three finishers in each Sprint (courtesy WA8WZG).

Mail or e-mail complete logs to:

144 MHz Sprint: <nrclog@aol.com>; Rocky Mountain VHF+ Group, P.O. Box 473411, Aurora, CO 80047.

222 MHz Sprint: <frank@horizon.sri.com>; 50 MHz DX Bulletin, 12450 Skyline Blvd., Woodside, CA 94062.

432 MHz Sprint: <wz1v@ntplx.net>; North East Weak Signal Group, 458 Allentown Rd., Bristol, CT 06010.

902, 1296, and 2304 MHz Sprint: <akyser@edci.com>; Badger Contesters, 2342 Glendale, Appleton, WI 54914.

50 MHz Sprint: <vhfuhf@voyager.net>; Great Lakes VHF/UHF Group, 434 Pattie Ave., Jackson, MI 49202.

The 3rd Annual Ontario QSO Party: 1800Z April 24 to 1800Z April 25, 1999. For details on this fun event, see K1AR's "Contest Calendar" column in this issue.

North American HSMS Contest: Introducing the Second North American High Speed Meteor Scatter (HSMS) Contest, sponsored by: The Western States Weak Signal Society.

Objective: Work as many North American stations as possible via meteor scatter during the contest period using HSCW on the amateur bands above 50 MHz. HSCW for this contest is any speed no less than 495 LPM (99 wpm).

Contest Period: 0000Z May 1, 1999 to 2400Z May 9, 1999. You may operate up to 48 hours during this time period. An operating period begins with your first transmission and includes time spent listening between transmissions. Operating time must be taken in 30 minute blocks. Time spent listening outside of your operating periods does not count towards your operating time. Multi-ham households: Each licensed ham is eligible to operate 48 hours under his or her own callsign.

Contest Operation: Random and scheduled QSOs count for contest credit. Use of the letter system for CQing is *required*—i.e., CQF, CQX. Report is your four-digit grid square. Real-time skeds, spotting assistance, DX-alerting nets, etc., are permitted for the purpose of arranging contact attempts. Refer to the Region II HSCW standard operating procedures at <http://www.nitehawk.com/rasmit/hscw-sop22.html> for suggested HSCW techniques and meteor scatter calling frequencies. The use of HSCW on VHF SSB calling frequencies is poor operating technique. A station may only be worked once per band during the contest period unless one of the stations has changed grid squares. A separate log is required for each grid activated. Each grid activated will be scored separately.

QSO Requirements: To log a completed contact you must copy: both calls, report, rogers. Any form of liaison communication between the parties involved in a contact in progress is prohibited. Any interruption of a contact in progress requires both stations restart the QSO attempt from the beginning. All information required for a complete contact must be exchanged using meteor scatter and no other propagation mode.

Classes: Single Operator Limited 2 meters only, Single Operator Limited Multi-band, Single Operator Unlimited 2 meters only, Single Operator Unlimited Multi-band. Limited—station ERP is restricted to less than or equal to 5 kw. Unlimited—Station ERP is greater than 5 kw. Multi-band stations must enter in the class corresponding to the highest ERP used. A station may only enter one class.

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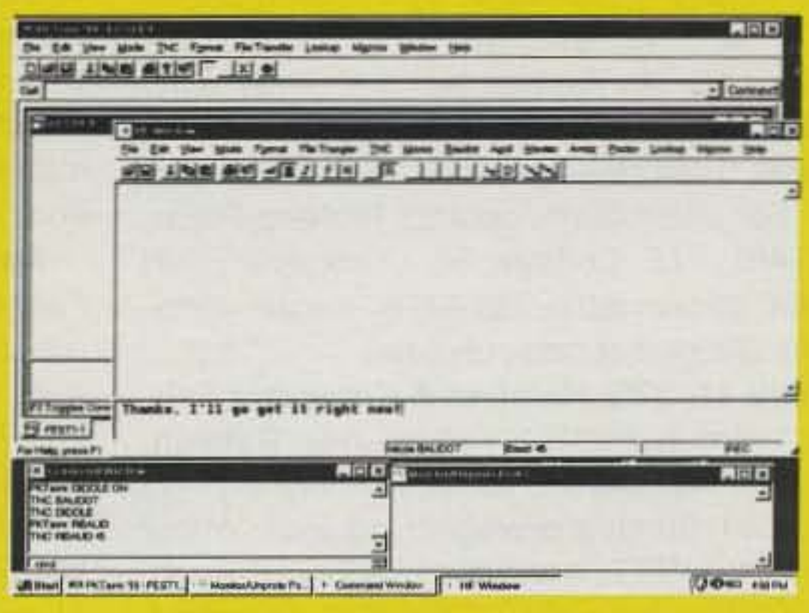

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(from page 6)

5S8 Canada or via the bureau via VE3ODX or VE3SRE. For more info, visit <www.durham-radio.ca/odxa> or e-mail to <ve3sre@rac.ca>.

• The following hamfests, etc., are scheduled for April:

Mar. 29–Apr. 2, National Hurricane Conference, Omni Rosen Hotel, **Orlando, FL.** Topics include four training sessions: "Marketing Your Emergency Communications Program" (3/29); "The Role of Amateur Radio in Hurricane Communications" (3/30); "Emergency Operations Center Management and Operations"* (3/29–31); "Basic Public Information Officer's Course"* (3/29–31). (*Limited seating; advance registration required.). Conference registration is $275. For more information, call (850) 906-9224; fax (850) 906-9228; web: <http://nettally. com/nhc>. For hotel reservations, call (800) 843-6664 or (407) 996-9840. Request the National Hurricane Conference group rate.

April 9–10, Southeastern VHF Society Conference, Atlanta Marriott Northwest in **Marietta, GA.** For reservations, call the Marriott at 1-800-228-9290. For more information and a registration form, which includes sign-up for antennas and preamp measurement as well as the family program, visit the SVHFS Web site at <http://www.svhfs.org/ svhfs/>, e-mail <k4sz@stc.net or write SVHFS, P.O. Box 1255 Cornelia, GA 30531.

April 10, 22nd Annual Hamfest, Graham Arena East, Olmsted County Fairgrounds, **Rochester, MN**. For information, call (507) 285-6522, e-mail: <nøhzn@aol.com>, or write to NØHZN, 4552 5th Street NW, Rochester, MN 55901, also see web site: <http://members.aol.com/rarchams>. (exams)

April 10, Hamfest and Electronic Show, Spokane Community College, **Spokane, WA**. For information, contact Warren Kelesy, S. 1405 Crestline, Spokane, WA 99203; phone (509) 534-8443. (exams)

April 10, 6th Annual North County ARC and LARK Amateur Radio & Computer Flea Market, Twin Mountain Hall, **Twin Mountain, NH**. For information, contact Richard Force, WB1ASL, 12 Cottage St., Lancaster, NH 03584; phone (603) 788-4428; e-mail: <bha-books @together.net>. (exams)

April 11, 27th Hamfest & Computer Fair, Jim Grahm Bldg, NCS Fairgrounds, **Raleigh, NC**. For information, contact, W4VFJ, (919) 556-8551; hamfest prereg/dlr inquiries: Wilbur Goss, WD4RDT, 4425 Watkins Rd., Raleigh, NC 27616; phone (919) 266-7883. (exams & handicapped accessible)

April 11, Framingham FleaMarket, Framingham High School, Framingham, MA. For information, contact Bev Lees, N1LOO, FARA P.O. Box 3005, Framingham, MA 01705; (508) 626-2012. (exams)

April 11, Hamfest, Valley Central HS, **Montgomery, NY**. Contact Ed J. Moskowitz, N2XJI, 123 Harold Ave., Cornwall, NY 12518-1701; (914) 534-3492; e-mail: <n2xji@banet.net> (home), <emoskowitz@bear.com> (work); web: <www.idsi.net/~mshovani>. (exams)

April 16–17, 18th Annual Midwinter Madness Hobby Elec-tronics Show, National Sports Center, **Blaine, MN**. For information, contact RARC, 4737 S. Hwy 101 #276, Minnetonka, MN 55345, or call (612) 537-1722. (exams)

April 17, Spring Fest, Bell County Expo Ctr, **Belton, TX**. For information, contact Mike LeFan, WA5EQQ, (254) 773-3590; e-mail: <hamexpo@tarc.org>; web: <http://www.tarc.org>. (exams & handicap accessible)

April 17, Hamfest, Metro East Trade Centre, east of Toronto. **Toronto, Canada**. For information, contact Ian Smith, VE3ITG, <ve3itg@rac.ca>; <http://www.globalserve.com/~ismith>. (handicap acessible)

April 18, SMARTS Fest, Canterbury Park, **Shakopee, MN**. Contact SMARTS, P.O. Box 144, Chaska, MN 55318. (exams)

April 23–24, "The Big One" Hamfest, Little Rock Expo Center, **Little Rock, AR**. For information, contact Chairman, K5VZ, Jim Blackmon, 1008 Pine St., Arkadelphia, AR 71923-4919; Phone: (870) 246-6735 (office); fax: (870) 246-6736; Web: <http://www.aristotle.net/~ares/lrh99.html>.

April 25, AARO Hamfest, National Guard Armory, **Galva, IL**. For information, contact Bill Anderson, WB9TEW, 103 SE 2nd Ave., Galca, IL 61434-1854; phone (309) 932-3023; e-mail: <bill@inw.net>. (exams)

April 24, Cherryville Hamfest, Warren County Farmers Fair-grounds, **Harmony, NJ**. Talk-in: 147.375+ / 146.730-. For information, call the CRA II Hotline: (908) 788-4080; web: <www.qsl. net/w2cra>. (exams)

April 24, Annual ARRL Hamfest, Sonoma Valley Veteran's Memorial Building, **Sonoma, CA**. For information, call Darrel, WD6BOR, at (707) 996-4494. (exams)

April 24, BCRO Hamfest, Bentonville National Guard Armory, **Bentonville, AR**. For information, contact Betty, NØXWQ, at (417) 435-2332 (leave message).

April 24–25, Western States Weak Signal Group Get-Together, at K6WLC's "Antenna Ranch" in **Ventura County, CA.** For more information, call K6WLC at (661) 245-1009 weekends or (661) 942-1312 weekdays.

April 25, 15th Annual Hamfest, Canfield Fairgrounds, **Canfield, OH**. For information, contact Don Stoddard, N8LNE, 55 S. Witney Ave., Youngstown, OH 44509; phone (330) 793-7072. (handicap accessible)

April 25, Bi-Annual Hamfest and ARRL Eastern NY Section Convention, John Jay HS, **Fishkill, NY**. For information, contact Ken Akasofu, KL7JCQ, 8C Hudson Harbor Dr., Poughkeepsie, NY 12601-5367l; phone: (914) 485-9617; fax: (914) 485-2402; e-mail: <kl7jcq@iname.com>; web: <http://www.mhv.net/~fritzing>. (exams)

April 25, Annual Hamfest & 1999 Delaware State ARRL Convention, Nur Temple, **New Castle, DE**. For information, contact Hal Frantz, KA3TWG, at (302) 793-1080; e-mail: <hfrantz@snip.net>; web: <http://www.magpage.com/penndel>. (exams) ■

digit grid square worked on each band.

Scoring (QSO points): Assisted 6 meters 1 point; 2 meters 3 points; 1.25 meters 9 points; and 70 cm 9 points. Random 6 meters 1 point; 2 meters 6 points; 1.25 meters 18 points; and 70 cm 18 points. The final score is the sum of all QSO points from each band times the multiplier.

Awards: Certificates will be awarded to the top three overall, and to the highest scoring station in each USA/VE call district and each North American DXCC country for each category. In addition, a certificate will be awarded to the highest scoring portable station activating two or more grids (based on the sum of their scores from each grid activated). A minimum of two QSOs is required to qualify for any award.Participants may only enter in one class for contest credit.

Reporting: The summary sheet, which must accompany the log, must include: Callsign used, Grid Square(s) activated, Maximum ERP used, Name, Address, and E-mail address (if available). Log information must contain the following data: Callsign of station worked, starting and ending times/dates of contact (and operating periods), Frequency, Reports, and sked or random.

Miscellaneous: Station equipment may only be used under one callsign, with the exception of multi-ham households. Single Band Entrants—time spent working stations on bands other than 2 meters does not count against your 48-hour operating time. Single band entrants are requested to send in check logs for all contacts made on other bands. The decisions of the awards committee are final. All logs must be postmarked or e-mail dated no later than May 30th. All e-mail logs must be sent in ASCII format to: <hscw@contesting.com>. Postal mail logs may be mailed to: WSWSS HSCW Contest, P.O. Box 86, Downey, CA 90241-0086.

Sample blank log page/summary sheets are available from <http://www.qsl.net/n7stu/hscw.html> or a reasonable facsimile may be used. A printed copy of the rules and sample log/summary sheet can be obtained by sending an SASE to the WSWSS. Enclose an SASE if you would like to receive a printed copy of the results via postal mail.

Note: The radiant of the *Eta Aquarids* shower is projected to provide the best conditions during the contest (in North America) from approximately one hour before sunrise local time for approximately eight hours daily. This is the suggested best operating time each day. Remember, though, HSCW contacts can be completed at any time of the day.

Suggested HSMS operating practices are described in HSCW Procedures (v. 7), available at <http://www.nitehawk. com/rasmit/hscw-sop22.html>. Information regarding calculating station ERP can be

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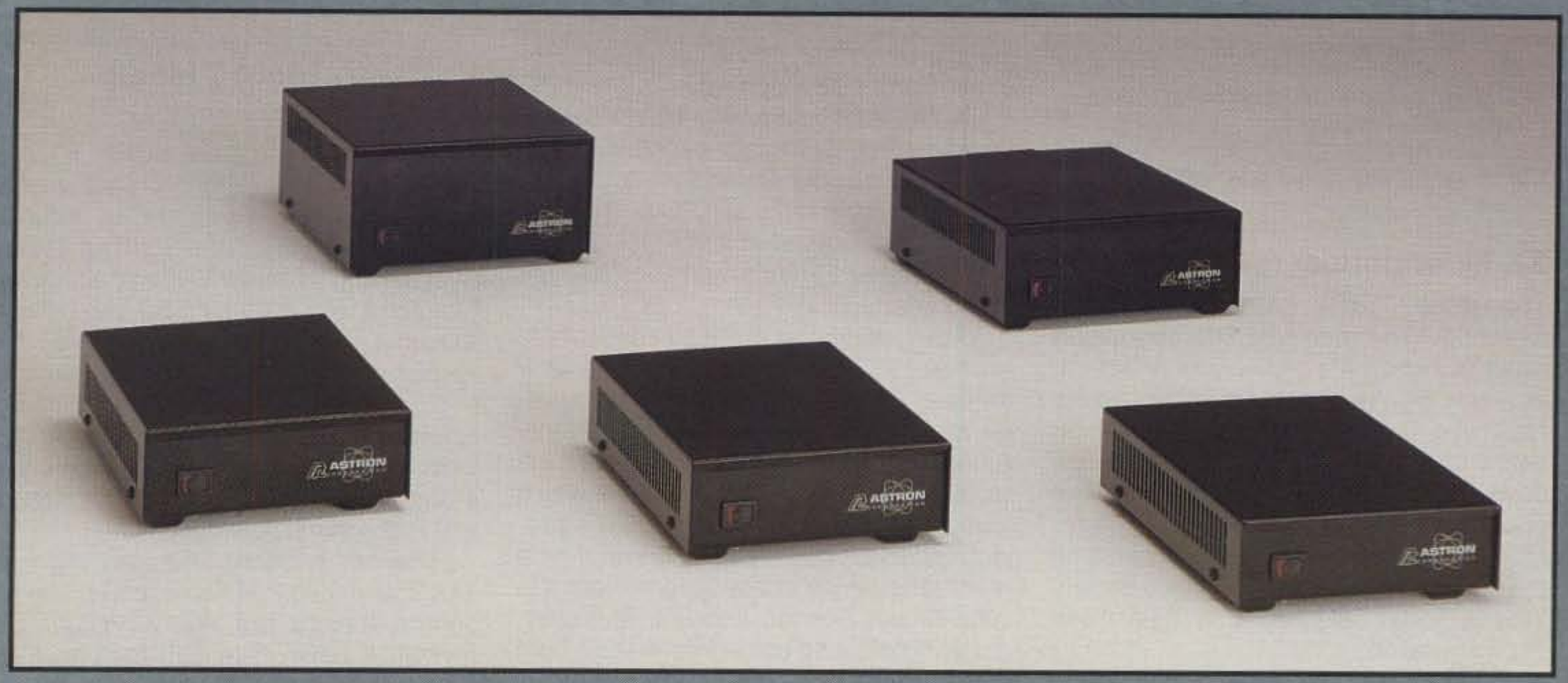

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SS-12	10	12	2.3 x 6 x 9	3.4
SS-18	15	18	2.3 x 6 x 9	3.6
SS-25	20	25	2 7/8 x 7 x 9 3/8	4.2
SS-30	25	30	3 3/4 x 7 x 9 5/8	5
SS-25M*	20	25	2 7/8 x 7 x 9 3/8	4.2
SS-30M*	25	30	3 3/4 x 7 x 9 5/8	5

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obtained from W5UN's website <http://web.wt.net/~w5un/>. Other information, including hardware modification tips, software, and HSMS articles may be found at these URLs:
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SK Moonbouncers

The same "ARRL Letter" reports the following: "The man who first bounced a radar signal off the moon—John DeWitt, Jr., N4CBC (ex-W4ERI)—died at his Nashville home January 25, some 53 years after making radio history. A few days earlier, on January 21, the man who engineered the first Amateur Radio Earth-Moon-Earth contact in 1960 with hams on the East Coast, Orrin 'Hank' Brown, W6HB, died in California. Both DeWitt and Brown were 92.

"While awaiting US Army discharge following World War II, DeWitt and his Project Diana team, named for the Roman moon goddess, got the OK from the War Department to investigate the possibilities of bouncing a radio signal off the moon. At the time, DeWitt was a lieutenant colonel assigned to the Signal Corps Laboratories in Ft. Monmouth, New Jersey. Project Diana achieved success January 10, 1946, when the team detected the 138 MHz radar signals reflected off the moon's surface. The event was trumpeted in the news media of the day as a major achievement, proving that radio waves could penetrate Earth's atmosphere.

"DeWitt later returned to Nashville and broadcasting, eventually becoming president of WSM radio. Coincidentally, Brown also did stints in radio at KPO and KSBR. Brown later worked at Eitel-McCullough and served as Eimac's marketing director for 20 years.

"Brown had been licensed continuously since 1923, and was a League member for nearly 50 years. He also was a charter member of the Santa Clara County Amateur Radio Association. In 1961, he received an ARRL Merit Award. He was a founding member of OSCAR and a project leader for OSCAR-3, the first real-time repeater satellite of any type.—thanks to Julia Brown Sneden and Bob McKinley, Jr., W2OMR; and some information from press reports."

In "The 432 MHz and Above EME Newsletter" Al Katz, K2UYH, reports the following: "There is sad news to report this month. Iain McHardy, GM3JFG, passed away at the age 85 in late January. Iain was not real active on EME the last few years due to his illness, but was a regular on 432 EME not that long ago. In fact he was the only active EME station from Scotland (GM). With Iain's passing Jim, GM4TXX, who reported Iain's death, plans to restart GM on the Moon."

Thursday Night 2 Meter N.E.W.S. Net

The following is from Del Schier, K1UHF: "I would like to remind everyone east of Indiana, south of Quebec City, north of South Carolina to join the North East Weak Signal group's 2 meter VHF and above net. Everyone with 2 meter SSB capability is welcome. We run the net to promote activity, discuss anything to do with beyond line-of-sight VHF and above communication, and we try to hook up stations for new contacts on 2 meters or the other bands. It is a good way to check your station's range and make some new contacts.

"The net is every Thursday night on 144.250 at 8:30 P.M. local (EST). The net control stations are WZ1V, W1COT, or myself, K1UHF. We call for check-ins starting to the east then moving through north then west and then south. I usually call every 20 degrees of the compass and will make it from east through west in about 10 or 15 minutes taking a list. Be patient and listen for a call in your direction. If you are a DX station you will get your turn for comments on call in; otherwise we will put you on a list and come back to you after we take the first list for your comments. Hope to hear you on the NEWS net."

And Finally . . .

I never had the pleasure of working King Hussein on the air. However, I admired him from afar. He had the rare ability to be a kind and considerate diplomat to everyone with whom he had contact. Whether they were his friends, enemies, or enemies who became friends, whether they were heads of state or commoners, all had equal footing with King Hussein. He represents a model for all of us to emulate as we make our journey through our lives.

In so many circles of the world, politically, religiously, from a humanitarian standpoint, from our ranks as amateur radio enthusiasts, he will be sorely missed. Certainly, this is the true measure of a person's greatness—just how many, many friends he or she had in his lifetime. By that measure, King Hussein was very, very great.

Until next month . . .

73, Joe, N6CL

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WORLD OF IDEAS

A LOOK AT THE WORLD AROUND US

Keys and CW Going Strong!—Part II

If you thought the keys, bugs, and paddles featured in Part I of this year's telegraphic bonanza were heartthrobs, check out the delights here in Part II. We highlight a magnificent mix of Morse manipulators and accessories of all types and sizes, and they all are terrific! This is life in the CW lane, gang, and it's a blast!

Now before starting this month's tour, I feel a word of warning or a disclaimer is in order. *Caution!* Continued exposure to this ongoing series of keys columns can lead to a lack of interest in voice modes! Some friends and fans have even confessed to stuffing their microphones into unused drawers or boxes. Some even forgot where their mics were stored! But who's complaining? We all know DXing is more productive on CW, right? Everyone needs a special item, interest, or pursuit in life, so grab a key that you find attractive and start making your own mark in ham history!

That's enough good cheer and inspiration for this time. Now let's get to the key views and notes!

New Vibroplex Goodies

First in our spotlight is the deluxe version Lightning Bug with all-chrome finish, red fingerpieces, and jewel movement shown in photo 1 (dazzling little critter, isn't it?). This particular model Vibroplex is no longer in production, but it is an all-time favorite item among CW enthusiasts and key collectors worldwide. Indeed, folks are hunting down, restoring, and using Lightning Bugs or their flat-pendulum and square-weight cousins, the Zephyr or the Champion, on a continuous basis.

A main stumbling block in restoring a flat-pendulum-style Vibroplex, however, is finding a replacement square speed weight. They seem to work loose over the years or get removed and lost by "curious fingers." Consequently, Vibroplex has been inundated with requests to "bring them back to life." In light of that fact, Vibroplex recently announced a limited production run of square weights for Lightning Bugs, Zephyrs, and Champions.

These are really neat bugs, friends. Start checking out those old storage places, find one, fix it up, and experience some real CW fun! A Lightning Bug is recognized by a double-post-supported flat bar for suspending its pendulum's damper wheel at the rear. The damper wheel has a single side support on the Champion (which also has a 3.5 inch wide base) and the Zephyr (which has a 3 inch wide base).

The new weights are available in regular (5/8 inch) and large (7/8 inch) lengths for versatile dot speed control, and as weight-only or as weight-plus-washer and thumb-screw assemblies. They are brilliantly chrome plated, and a few are also available in nickel finish for restoring older version Lightning Bugs.

Another item worthy of recognition is the handsome hardwood carrying case (photo 2) for an "Original" model bug. It has a brass handle and hinges, a famous Vibroplex logo plate, and felt lining, and it is designed to hold a bug safely in place when traveling. Considering the popularity of old-style Vibroplex cases, these new ones should quickly become "functional collectibles."

Want one or both new Vibroplex treats? Contact the Vibroplex Company, Inc., 11 Midtown Park E., Mobile, AL 36606-4141, or phone 1-800-840-8873 to order them.

More Vibroplex Saga

The Vibroplex story, incidentally, seems endless. It is also filled with captivating telegraphic tales from yesteryear, tales that continue to be told through classic keys of all types. Some quite interesting (and historically significant) examples of that fact are included in our following paragraphs and photos.

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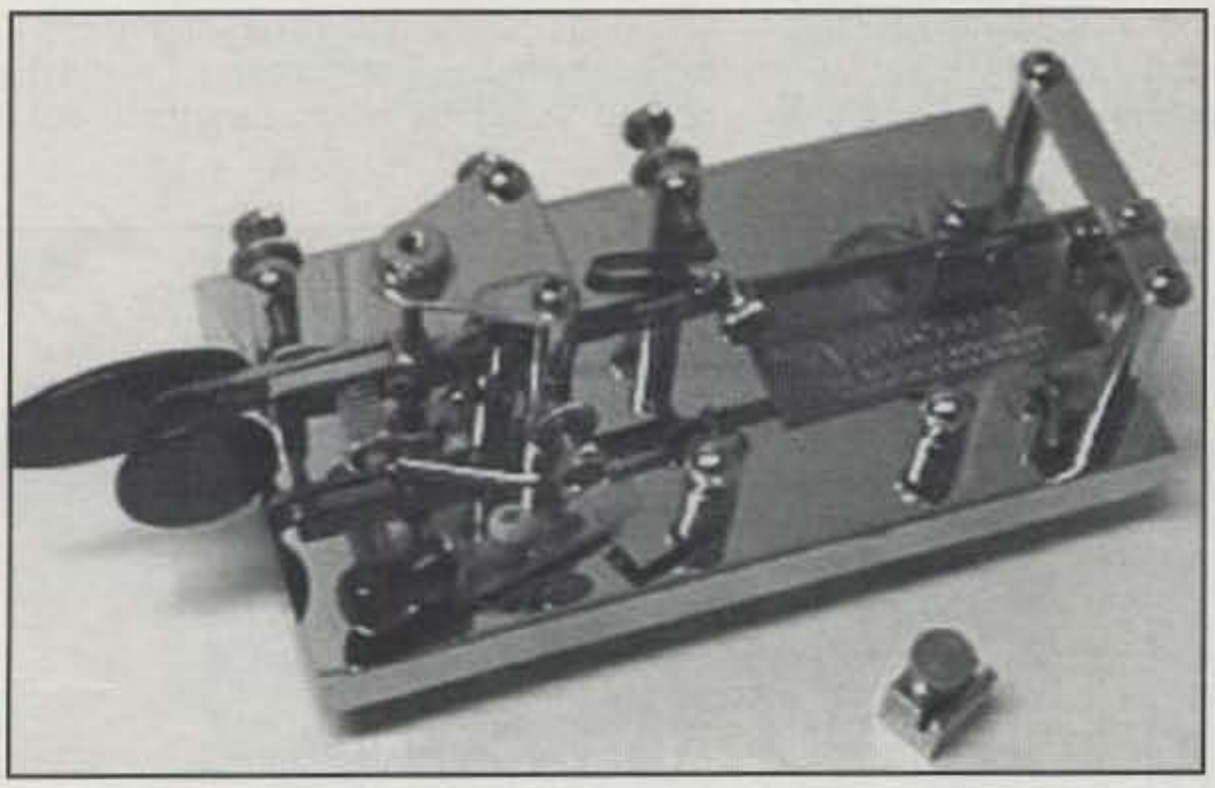

Photo 1– This chrome-plated, jewel movement, and red fingerpiece-equipped "Lightning Bug" is a real attention grabber and all-time favorite collectible. The star attraction in this picture, however, is its square weight. Vibroplex recently made a limited production run of square weights to fit Lightning Bugs, Zephyrs, and Champions and to warm the hearts of CW devotees everywhere. (Photo courtesy Mitch, W4OA, of Vibroplex.)

Photo 2– Another exciting new item from the oldest name in amateur radio is this hardwood carrying case for an "Original" model bug. It has a brass handle and Vibroplex logo, and is felt lined, bug-cozy, and first class all the way! (Photo courtesy Mitch, W4OA, of Vibroplex.)

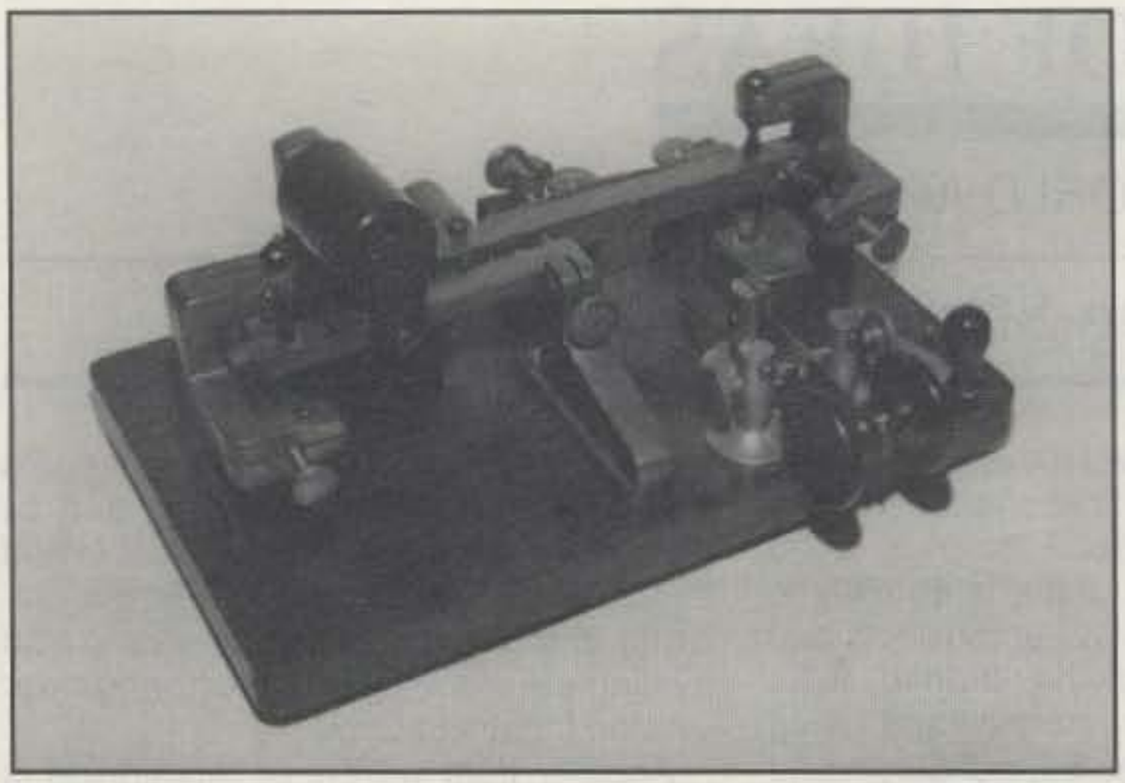

Photo 3– A very early wood-base Martin Autoplex (1902 vintage). This item's operation might be compared to an old-style code practice buzzer slowed down with a large vibrating arm that makes dots as it moves while the operator makes dashes manually. The Autoplex was a forerunner of Martin's famous Vibroplex bug. (Photo courtesy proud owner and master key collector Gil Schlehman, K9WDY.)

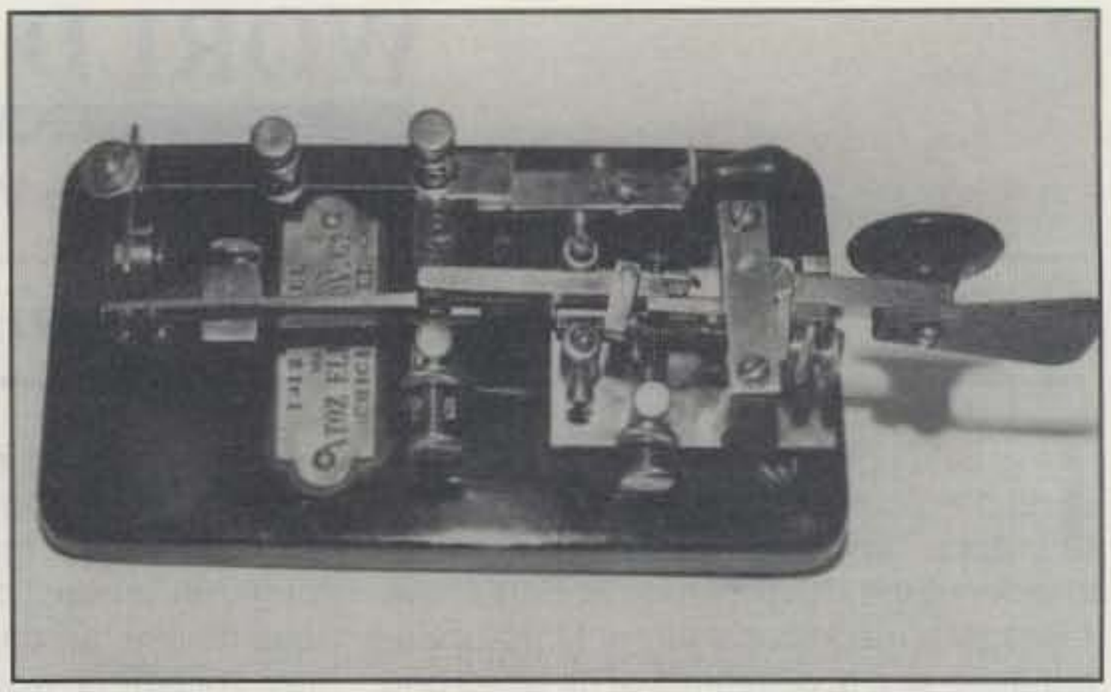

Photo 4– This rare model "X" copycat bug was made by the A to Z Electric Novelty Company of Chicago, Illinois, apparently in very limited number before being discovered and ordered to cease production. The bug is unique in the fact that it uses a single set of contacts to make both dots and dashes. Discussion in text. (Photo courtesy Gil ("Key Man") Schlehman, K9WDY.)

First up is a very early (1902) wood-based Autoplex (photo 3) made by H. G. Martin and now residing in the world-class collection of Gil Schlehman, K9WDY. This version of the Autoplex looks slightly different from the two in Bill Holly's *Vibroplex* book, probably because Martin made them by hand in a "learn and improve as you go" manner. Maybe that explains why many parts look as if they were salvaged from pony relays found in telegraph offices.

After making a few wood-based Autoplexes, Martin moved up to an all-metal design complete with solid-metal levers and custom-cut fingerpieces rather than butted hand-key knobs as shown in photo 3. The Autoplex required batteries to energize its electromagnets and it was a bear to adjust, but it inspired the first, or "Original," model Vibroplex bug—a key that continues to be produced today. (Owning a Vibroplex bug really is like owning a piece of history!)

Vibroplex-Related Keys

Next in the spotlight is a most curious item indeed: a perfectly duplicated model "X" Vibroplex bug made by the (gasp!) A to Z Electric Novelty Company of Chicago, Illinois and shown in photo 4. Like many of you, I assumed this story ended when A to Z was court-ordered to cease production of their "improved Vibroplex" (which, as highlighted in a past keys column, was an exact copy of Martin's "Original" Vibroplex). They stopped, but then switched to making an absolute duplicate, or clone, of the model "X" and even stuck their A to Z nameplate on it—again! Some folks sure are dense! I'm not sure how this tale of two bugs ends, but since A to Z is no longer in business, I can only conclude "time wounds all heels!"

The "X" model bug is most intriguing to study, as it uses a single set of contacts to make both dots and dashes. That's right: a separate dash post is not used. The pendulum's vibrations cause the dot contact to vibrate and tap its mating post on the bug's left side as usual to make dots. The dash lever, however, is above the pendulum and presses the (dot) contact against its mating post to make dashes. A telegraphic treat indeed!

Other individuals and companies followed in A to Z's footsteps, copying Martin's bug designs and visualizing rolling in big bucks before getting caught or maybe hoping Vibroplex would buy them out if

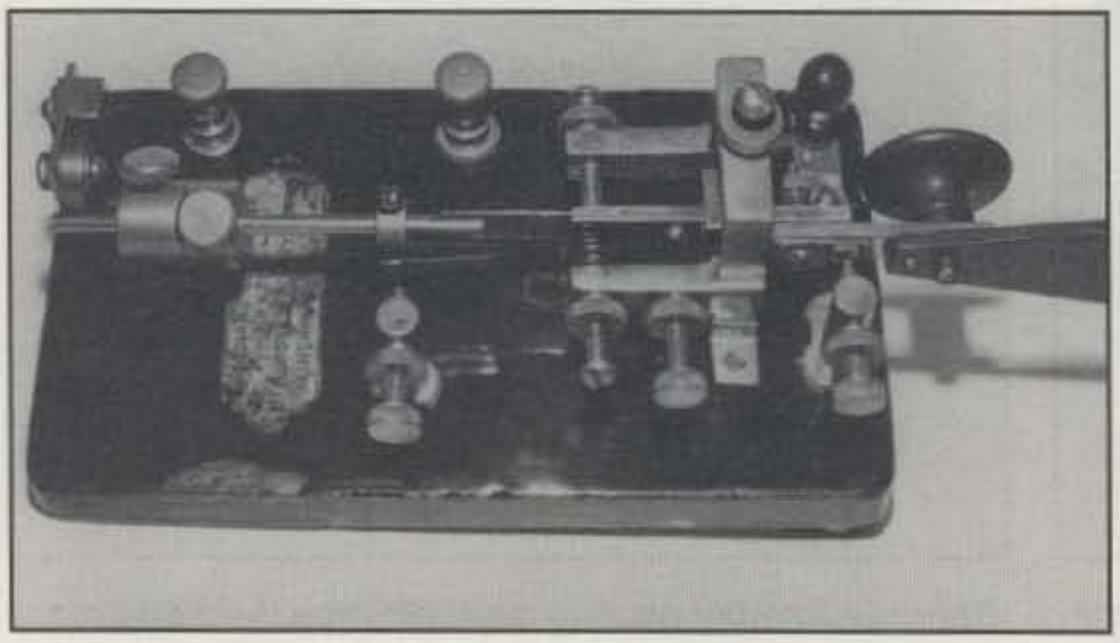

Photo 5– Yet another quite rare "Vibroplex look-alike" is this briefly-produced version of the "original" made by the Mt. Auburn Specialty Company of Cincinnati, Ohio. The item's nameplate states its own Mt. Auburn guarantee, which unfortunately proved worthless. (Photo courtesy Gil, K9WDY.)

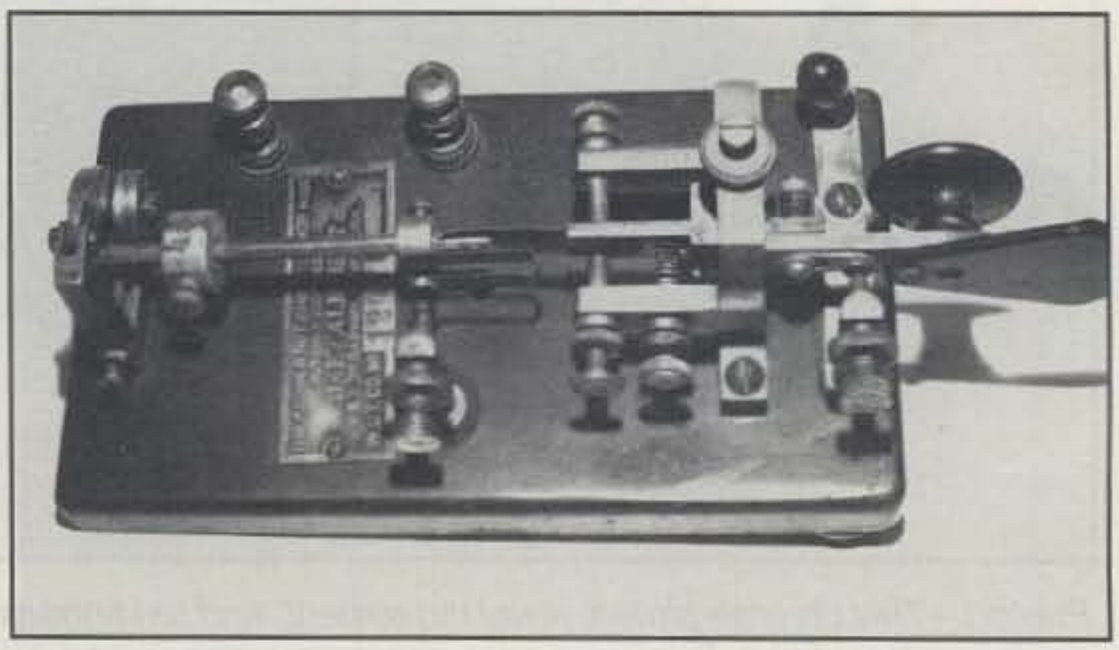

Photo 6– Non-Vibroplex and bugs of mysterious origin were license-restricted to use on railroad and private telegraph lines unless authorized for Western Union use with an Albright plate as shown on this key. Similar-style bugs with blue, green, and black bases plus gold pinstriping were also produced, discovered, and retrofit with Albright license plates. (Photo via K9WDY.)

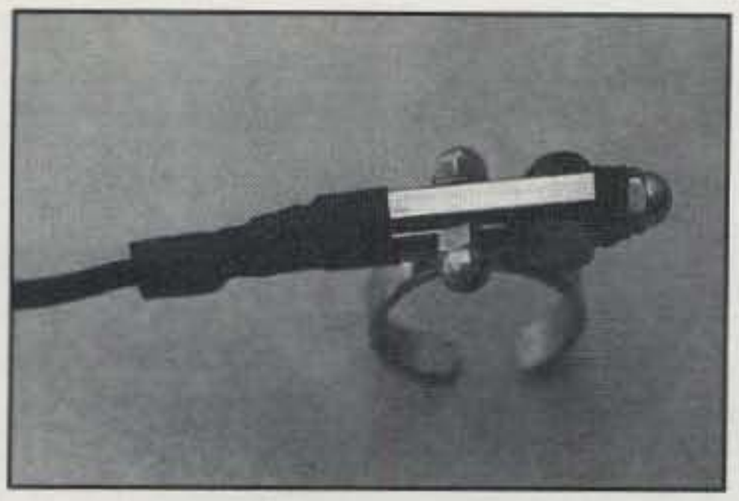

Photo 7– Captain Marvel returns! This new dual-lever mini-paddle is made on an adjustable ring. Despite its tiny size, it handles better than some large paddles. Item is all brass, made by KK5PY, and measures 1.75" long by 1.25" tall.

Photo 8– New from the workshop of Englmar Wenk, DK1WE, is this tiny micro key called "Micky." It measures 40 by 25 by 30mm and is perfect for portable QRP operations. Micky has plated spring bearings, silver contacts, and set-screw adjustments for both tension and travel. (Photo courtesy DK1WE.)

discovered. The idea did not work, but it resulted in some very short-production "copy cat" bugs that are real collector's items today. One example is the Mt. Auburn bug shown in photo 5. Perchance you cannot read the nameplate, it is inscribed "sold and guaranteed by the Mt. Auburn Specialty Company, Cincinnati, Ohio, USA." The guarantee must have been valid for five minutes or five blocks, whichever came first. To the best of my knowledge, Gil Schlehman's Mt. Auburn bug is the only one left in existence.

Faced with the challenge of exterminating bootleg bugs, Martin's marketing agent (and the founder/first owner of the Vibroplex Company), J. E. Albright, moved into high gear. He first secured exclusive rights for using only Vibroplex bugs on Western Union's growing maze of telegraph lines. Then he added a statement in ads saying telegraphers using non-Vibroplex bugs were liable for damages and implied they could be fired on the spot if discovered. Albright then provided a nameplate that could be obtained at nominal cost and attached to an illegally-made

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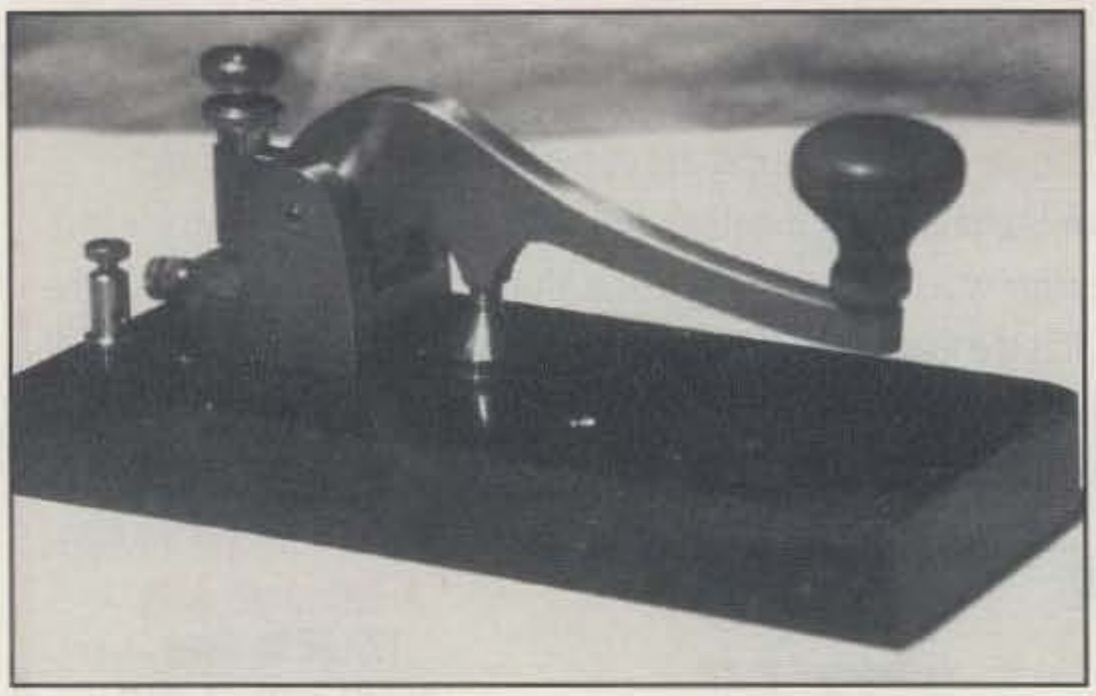

Photo 9– The new Chubbock-type camelback replica key being produced by Englmar Wenk, DK1WE. It sports a polished brass mechanism, ball race bearings, fine adjustments for travel and tension, silver contacts, cherrywood knob, and sturdy granite base. It measures 145 by 65 by 70mm and looks like it is right out of the pages of telegraphic history! (Photo courtesy DK1WE.)

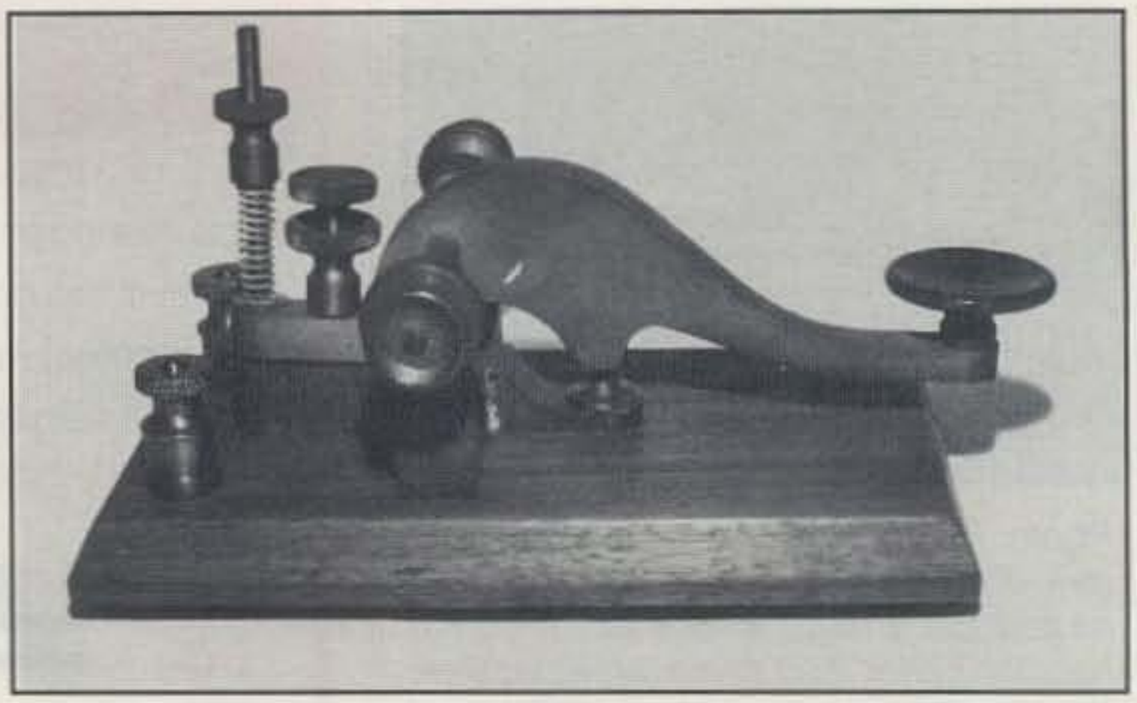

Photo 10– The similarity between Englmar Wenk's replica of a German camelback and this Chubbock key from the Civil War era indicates the design was popular enough to span continents. Compare the offset arm and distinctive gap adjustments on each key. Fascinating! (Photo courtesy Gil, K9WDY.)

bug. Anyone or any company making or operating bugs on Western Union telegraph lines pumped a few coins for licensing Albright's way. The add-on plate, shown on a bug of unknown origin (and in the K9WDY collection, naturally), is shown in photo 6. It is inscribed "This machine is NOT guaranteed NOR made but only licensed by J. E. Albright, 253 Broadway, New York" and carries a special Western Union serial number. The nameplate idea worked well until Martin's patents and Albright's license expired. Then the fun really began—but that's a story for another time.

Three New Treats

Now shifting from "chat mode" to viewing more new keys, your attention is next directed to the—err, ahh—Captain Marvel ring key made by Dennis Foster, KK5PY, and shown in photo 7. Don't snicker at this tiny Ne-Ke type dual-lever paddle, friends. It is surprisingly controllable, useful to more than 35 wpm, and quiet as a mouse (really!). I slide it on my thumb and use it at night with my den's beside-chair mini rig, and it works like a champ. The ring/finger mount might seem strange, but I find it ideal for those "no desk" operations where you must hold a key or paddle in your hand.

Look closely at this key and you will see a small spring metal strap bowing out from each side of the main/center brass channel. When you press on either strap, its tip end slides forward slightly and contacts a stiff wire strip beneath a respective brass nut in front of it for making dots or dashes. A third brass nut on the main channel's front end (opposite cable connector) hides inner wiring and adds a decorative touch. Want one, Captain Marvel fans (need I ask)? Drop a note to Dennis Foster, KK5PY, 61700 E. 180 Road, Fairland, OK 74343 for details.

Remember Englmar Wenk, DK1WE, the German craftsman making miniature "Minke" hand keys and "Twinke" dual vertical lever/cricket paddles featured in a previous keys column? He is back on the scene with two more gems, and they are right in line with modern trends (miniatures for QRP and replicas of classics for big rigs). His first new item is "Micky" (*aka* MICroKeY) shown beside a postage stamp for size reference in photo 8. This little key is well built, rugged, pocketable, and pivots from the rear, traditional German style. It has adjustments for gap and tension, and seems to be a real gem!

Wenk's other new wonder is the smart-looking replica of a 1850s camelback key shown in photo 9. This one really "jumps off the page," as it is strikingly similar to what many folks consider the most famous camelback of all—the classic Chubbock. Wenk said he modeled his key from the original one displayed in the German Post and Telegraph Museum. He modified it for smoother operation by adding

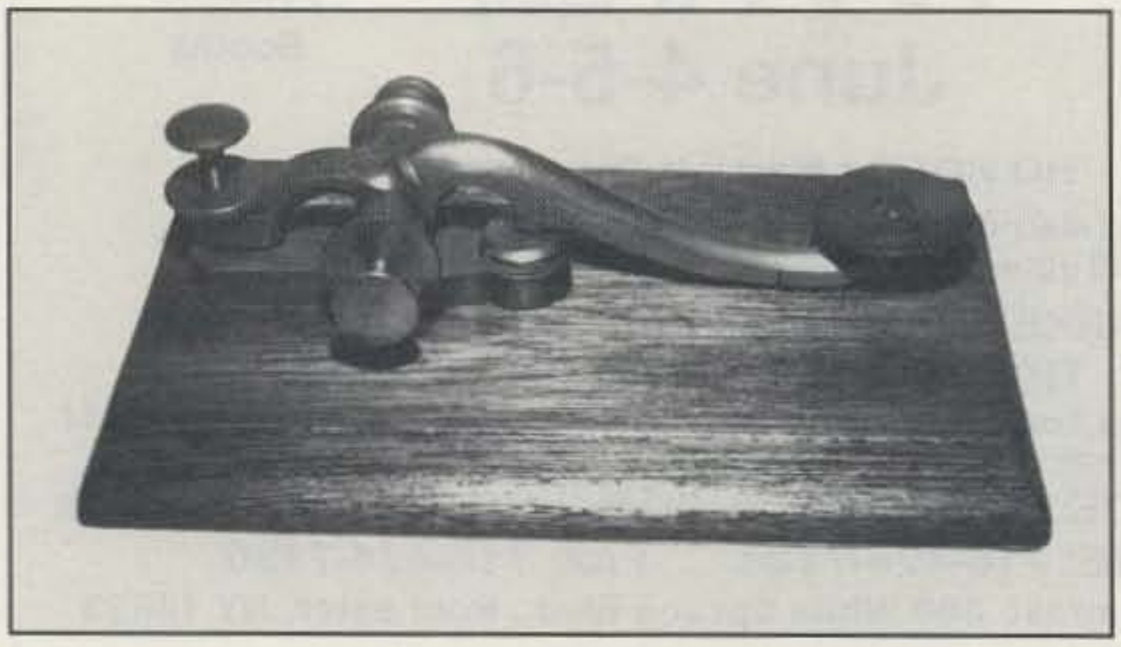

Photo 11– Another Chubbock key, circa 1860s. Notice the double-hump design near the fulcrum and the knob's low-to-base position. (Photo courtesy K9WDY.)

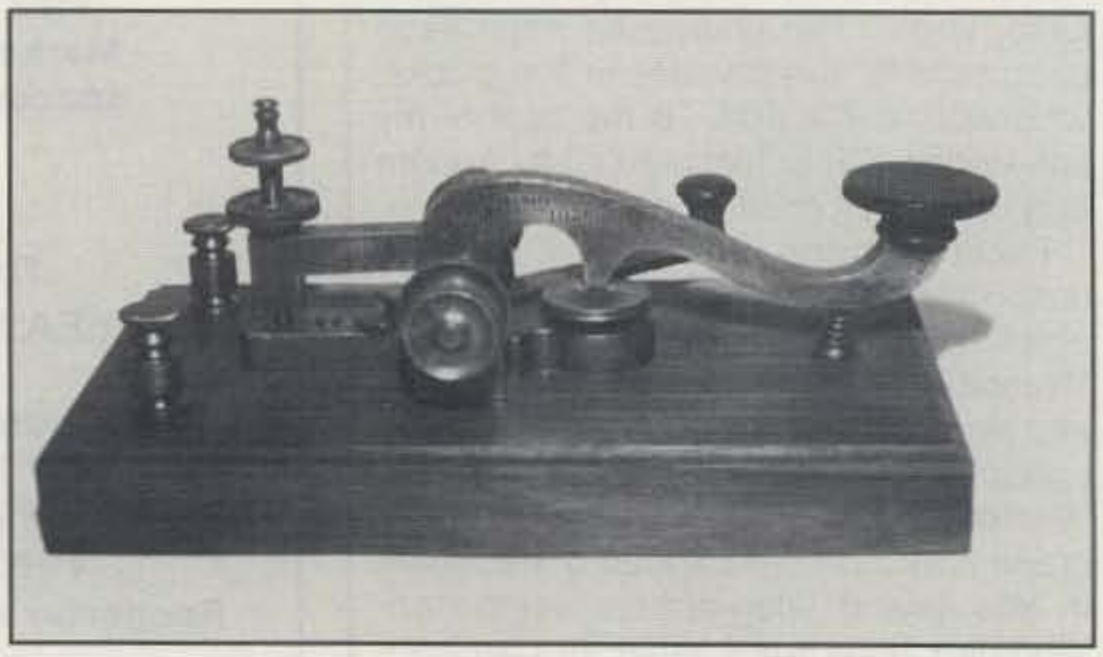

Photo 12– This Knox and Shain camelback sports an unusually humped and artistically shaped arm that curves up to mate with the knob's base. Rear adjustment sets gap. Tension spring is under arm near knob. (Photo courtesy K9WDY.)

Say You Saw It In CQ

ball race bearings at the pivot point and moving the tension spring so it sits horizontally rather than vertically in the lower rear area. He then "topped off" the key with a Labrador granite base and cherrywood knob, and emerged with an absolute show stopper. Just imagine using this beauty on the air today! And you can. Both the Micky and the camelback replica are available from Englmar Wenk, DK1WE, Hubenring 4, D-88048 Friedrichshafen, Germany (telephone 07 544-2635). Unofficially, I understand Wenk is also considering making a miniature version of his camelback replica. That one should really be a heartthrob! Stay tuned for more details!

More Classic Camelbacks

Although representative of a much earlier time period (1850s to 1880s, typically), camelback keys are historically significant items just like classic bugs. They are also very interesting to study. Due to their age, however, the only place you can expect to see camelbacks today is in private collections. Some fascinating samples (compliments of Gil Schlehman, K9WDY) are thus highlighted in photos 10, 11, 12, 13, and 14. Background information on each of these keys was limited, and we are now running very short on space, so I will briefly point out some of their more obvious or well-known aspects.

First, camelbacks were originally devised to minimize carpel-tunnel syndrome, the "glass arm" effect that afflicted big-time telegraphers pumping basic hand keys 16 hours a day. The attempt was meager, but it was the only solution until bugs hit the scene. As you can see in the photos, camelbacks are quite artistic in design. Notice also how some camelbacks have long arms/levers that extend past their base and some have low-slung arms. They also have trunion pins inserted through their arm for pivoting (the pins also work loose with heavy use). Even a collection of only camelbacks is exciting!

Summary

It's past the time to bow out and we still have more keys to show and share—new ones, old ones, and funky ones such as a farmboy's key, bellboy's key, Flintstone key . . . gad! We will thus divert next month's column focus to some QRP updates, maybe check out another hot area of interest, and then return with Part III of this year's keys special. Stay tuned, keep on QRP'n, and let's meet one weeknight soon on 30 meters. May the force of good signals be with you!

73, Dave, K4TWJ

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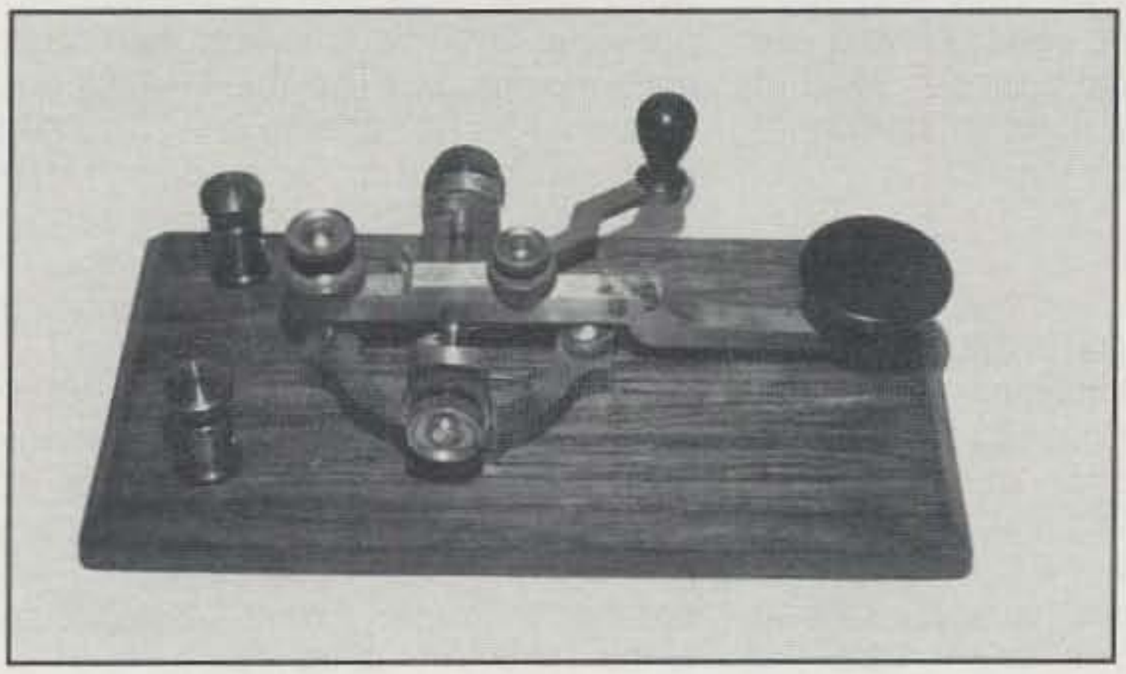

Photo 13– Step-down lever keys such as this Patrick and Carter item attempted to upstage camelbacks during the 1880s. They saw use in a limited number of telegraph offices and are thus quite scarce today. (Photo courtesy K9WDY.)

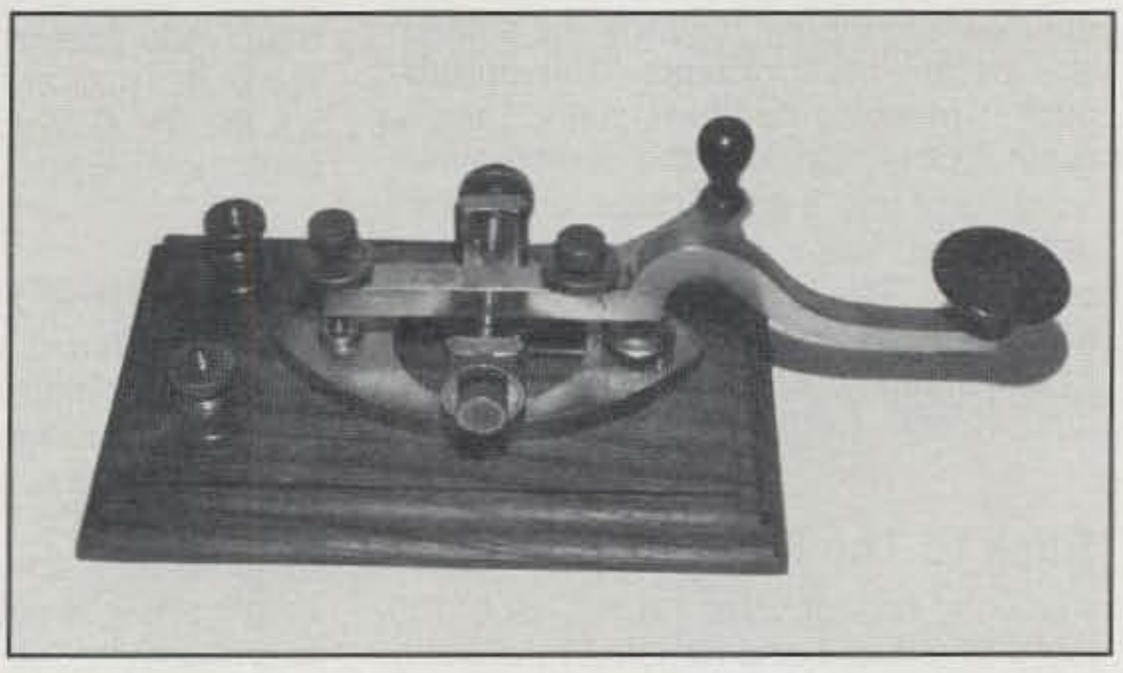

Photo 14– Representing the more traditional style of camelback is this well-preserved Edison and Murray classic from the 1870s. Notice the trunion pin press-fit through the arm, a design that often caused excessive side-to-side "play" in well-used camelbacks and spark keys made prior to the Bunnell "Triump" and military J-38 era. (Photo courtesy K9WDY.)

BY BUCK ROGERS, K4ABT

PACKET USER'S NOTEBOOK

CONNECTING YOU AND PACKET RADIO IN THE REAL WORLD

Everything You Ever Wanted in a Dual-Band Handheld and More

Late in the evening (or night) I was reading a message in my K4ABT-1 mailbox. Frank, K4ICT, had left a tidbit for me about a great new handheld transceiver by Kenwood. It is Kenwood's model TH-D7A. So far there was nothing spectacular—until I reached the part of his message that read, "and Buck, it has a built-in 1200 and 9600 baud TNC. It is also capable of passing pictures from the Kenwood VC-H1 on packet."

Boing! Frank just got my undivided attention! By now most of the readers of this column know that I am an addict when it comes to transferring sound and video via packet radio (or any other digital mode, for that matter). If you didn't know, you had better take a look at the issues of *CQ* going back about 15 years. No, as a matter of fact, just look at last month's column.

The morning following K4ICT's message, I got on the phone to Arnie Sposato at *CQ* to find the best source for the TH-D7A. The rest is history. I now have two TH-D7A's talking to each other and to every station within earshot of my QTH.

How else can I say it? "*Thank you, Kenwood, for listening!*" This is the kind of technology that will catapult us into the next millennium.

Now that an OEM has taken the steps to provide us with the tools to make voice and pictures happen, the burden falls on me to make sure their product (message) is delivered to the masses.

I think everyone knows how much I've wanted to see this kind of product and device in the market place for the amateur and packet radio operator. For portable packet or voice communications this is great, but let's look at the overwhelming advantage that it gives to the emergency and disaster communications segment of our hobby. This is the tool that will give us a compact packet station and enable us to send and receive messages and pictures directly from a disaster scene.

The Kenwood TH-D7A dual-band handheld transceiver.

The VC-H1 Visual Communicator.

Back to The Future—Again

Kenwood has designed a fist full of features in a dual-band handheld transceiver for VHF and UHF multi-mode operation. When I say "multi-mode," I'm not stretching the truth.

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The first of the great features is, of course, the built-in TNC which conforms to the established AX.25 protocol. Not stopping there, Kenwood made the built-in TNC operate at both 1200 and 9600 baud. Add your laptop computer and you are in the packet radio business. Most of all, the TH-D7A is a powerful performer while being quite easy to use.

More Memory

The TH-D7A has a total of 200 memories, and it allows memory naming, not to mention the wide range of naming conventions that can be entered for "each" channel. Remember DOS? This is what comes to mind when I speak of the naming convention used if you wish to apply a name to a given channel. Yes, as with DOS, we can apply up to eight letters, numbers, or ASCII (alphanumeric) characters to identify a channel. There are several scanning options that can be included in your configuration scheme.

Although Kenwood provides the new owner with a list of precautions on the opening page of the manual—stating that the transceiver may "overheat" when transmitting at high power levels—I never experienced any problems. Of course, when running packet, the duration of a packet at 9600 baud is less than 5 seconds maximum. I use the TH-D7A on a frequency that is not used in my area. This way I can "open it up" for speed and faster throughput at 9600 baud. When sending pictures or files via packet, I set the TX-Delay short, the PACLen to maximum, and the MAXFrame to 7. Let 'er rip!

When using the VC-H1 in the SSTV modes, we can send and receive images quickly (17 seconds @ 9600 baud). It's easy and can be done from almost anywhere. We can also use the VC-H1 as a speaker/microphone when it is connected to the TH-D7A (see fig. 1).

With a wideband (12 kHz or more) dynamic range on VHF and UHF, the TH-D7 exhibits some of the best adjacent channel rejection that I've experienced lately in a handheld VHF or UHF transceiver.

With the supplied 9.6 volt battery you get a maximum of 5 watts of power on VHF

Say You Saw It In CQ

and UHF with the TH-D7A. During the period I was running full (high) power, the radio didn't show any sign of overheating while transmitting for long periods. As you can see in the specs, the TH-D7A can run up to 5.5 watts from a 13.6 volt DC external power source.

To keep us operating in the field, there is an optional AA battery case as a "just in case." This option may be a means to augment the PB-39 battery should it fail from heavy use. I've learned through many years of experience that it's a good idea to have a backup battery pack handy. Because AA batteries are easy enough to obtain, I opted for the optional AA cell battery case.

Loud Mouth and Fat Fingers

The TH-D7A sports a relatively large speaker for a handheld transceiver. Receive (voice and data) audio quality is clean, crisp, and clear. At higher volume levels the distortion is negligible. Transmit audio quality is better than is average in a handheld radio. This may support why the TH-D7A works so well at 9600 baud.

The keypad size and spacing make the unit easy enough to use, even with my "hammer-tipped" fingers. The keypad labels and markings are also clear and easy to read. While we are on the subject of "easy to read," the display visibility may be backlit by toggling it ON or OFF. In either case, the display is almost twice the size of that of other handhelds I've viewed lately. The character size is large enough for my (60+ year old) eyes to see with good clarity. It is easy to determine which mode you are in by noting the icon that is present in the display. These icons indicate which of the numerous feature modes or functions you are in.

Documentation

More than 100 pages make up the TH-D7A manual. Almost every instruction is completed on a single page so that you do not have to turn to the next page or section to finish the material. I found the manual easy enough to use, beginning with the basic "first QSO" and continuing on to the finale of sending an SSTV picture or configuring the internal 1200 and 9600 baud TNCs.

It's a "no-nonsense" manual that stays with the train of thought while covering important details. Look at the "Notes" you will find throughout the manual. These notes, I found, are provided to support the explanations of various steps and directions.

Full Support for APRS™

Kenwood goes beyond the limits of what today's amateurs expect from a radio. The new TH-D7A is equipped with a built-in AX.25 TNC for simple packet operation or to be used with a handheld GPS (NMEA-0813 compatible) as a full-function

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"This radio is the 1998 edition of Art Collins KWM1. I have used Collins, Signal One and several commercial sets over the years that I though hard to equal, let alone beat, but this Indian does just that. The DSP in the receiver is second to none." **HARRY SNYDER W7HC, Quarter Century Wireless Magazine**

"I like it so much I may sell my other HF rigs and purchase another 505DSP." **MYRLEN E. SMITH, WB3IAL**

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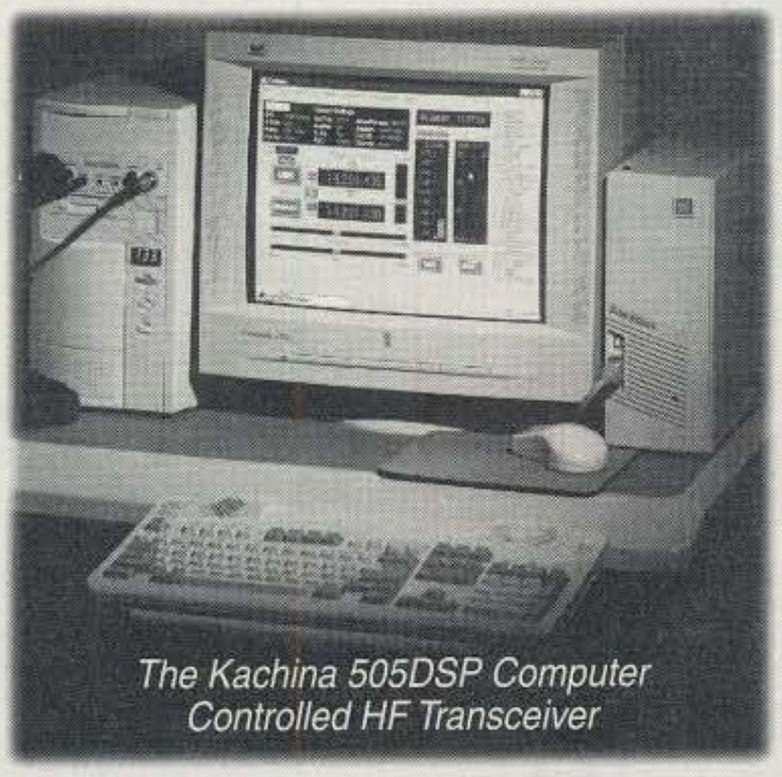

The Kachina 505DSP Computer Controlled HF Transceiver

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"I believe this radio is the best on the market today and I'm proud to own a radio of this quality." **DONALD URBYTES, W8LGV**

"I have had my 505DSP for about 6 months now. It's an amazing piece of equipment. I just worked 3Bxxx on 40 meters with 1 call. I could barely hear him on my IC-756, he was perfect copy on the Kachina." **STEVEN L. WEINSTEIN, K2WE**

"We noted extremely low composite (phase) noise - approximately 10 dB lower across the 2 to 22 kHz range than many radios we have tested recently." **QST MAGAZINE**

"The 505DSP, in case you haven't heard, is the first big step in the next generation of HF rigs. It not only incorporates Digital Signal Processing technology that meets or surpasses anything available today for ham equipment, but also provides front-end control of the transceiver via a computer-based software interface." **RICHARD LUBASH, N1VXW, FOR 73 MAGAZINE**

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* COMPUTER AND MONITOR NOT INCLUDED.

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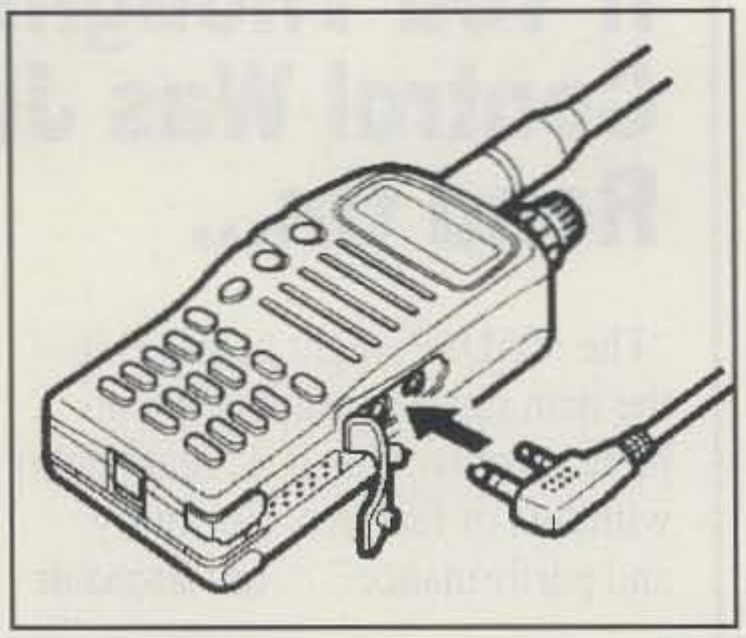

Fig. 1– When the VC-H1 is connected to the TH-D7A, it also functions as a speaker/microphone. The VC-H1 does not need to be on to function as a speaker/mic.

APRS™ Automatic Packet/Position Reporting System. The TH-D7A is capable of reporting exact position, speed, and heading as well as calculation of distance to destination. The TH-D7A can also be used for APRS™ messaging to send up 45-character messages through APRS™ or an APRS™ Internet gateways without the use of a PC.

Additional features such as advanced functions and capabilities with the VC-H1 Visual Communicator and HF SkyCommand operation with the Kenwood TS-570 D/S or TS-870S series radios are possible.

The new, unique jog/cursor key makes navigation through the TH-D7A features a breeze. The TH-D7A now makes data communications simple and easy. Features include:

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- 200 memory channels w/8-character display
- PC programmable for frequency and name (PG-4W required)
- 16 backlit keys (laser cut from inside)
- Built-in CTCSS encode and decode
- Mil-spec 810C/D/E water resistant
- 10-channel DTMF telephone autopatch memory
- HF Skycommand operation (requires PG-4R)
- Monitor DX Clusters
- TM-V7A and TM-742AD DTMF Remote Control
- VC-H1 Visual Communicator advanced control operation

Let's Have Some Fun "Packeting"

First things first! Now that we know a little about the TH-D7A, let's begin having fun packeting.

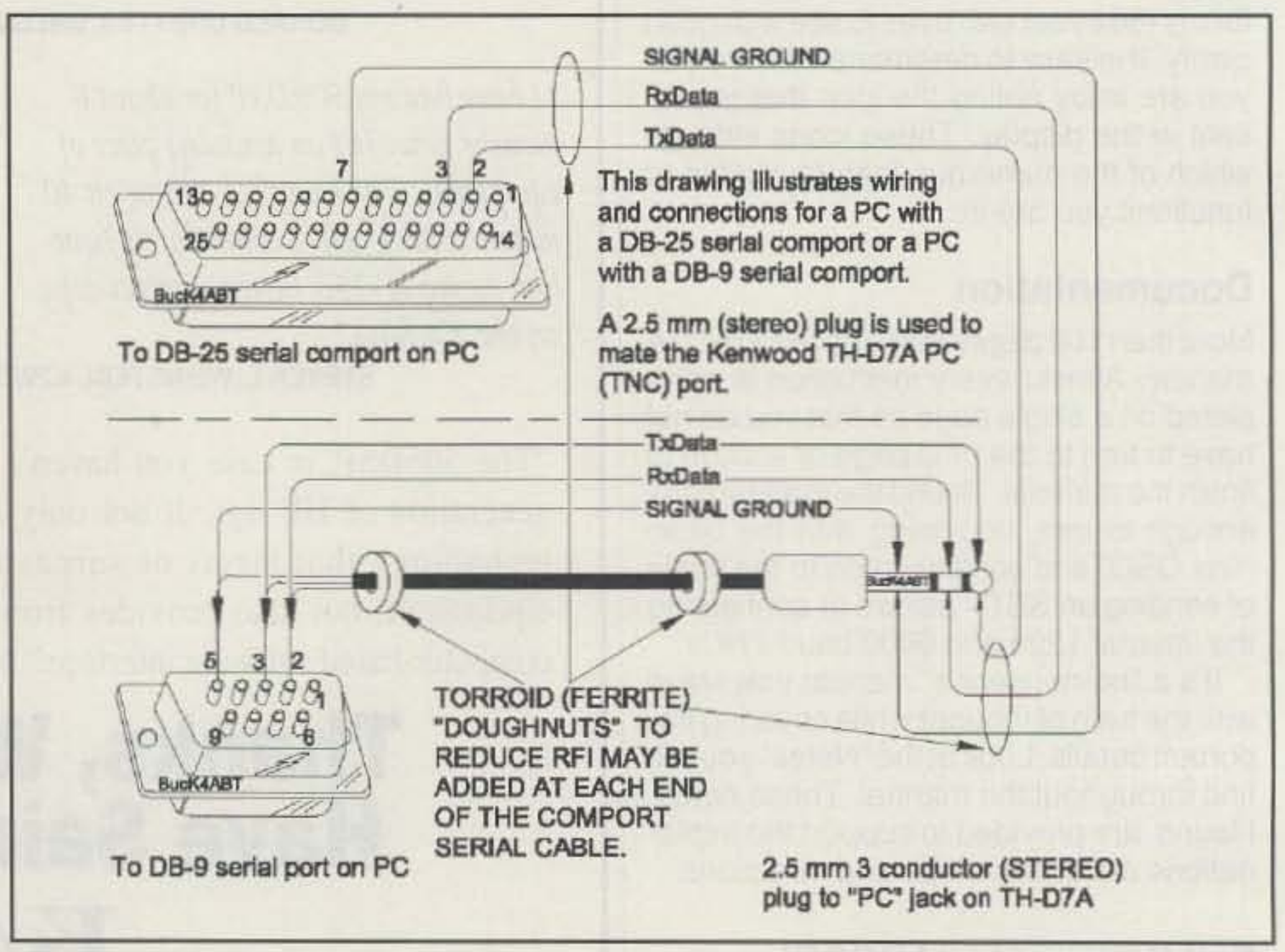

Fig. 2– This drawing depicts a means of interfacing the computer (desktop or laptop) to the TH-D7A comport. Notice that I have drawn both types of connectors (DB25 and DB9) to cover either type of PC RS232 serial comport. Refer to the illustration for specific signal connections in the 2.5 millimeter plug. The ferrite doughnuts may be used to reduce CPU noise from entering the radio via the comport. This cable wired for the TH-D7A and with the DB9 connector attached is available from Kenwood as option PG-4W.

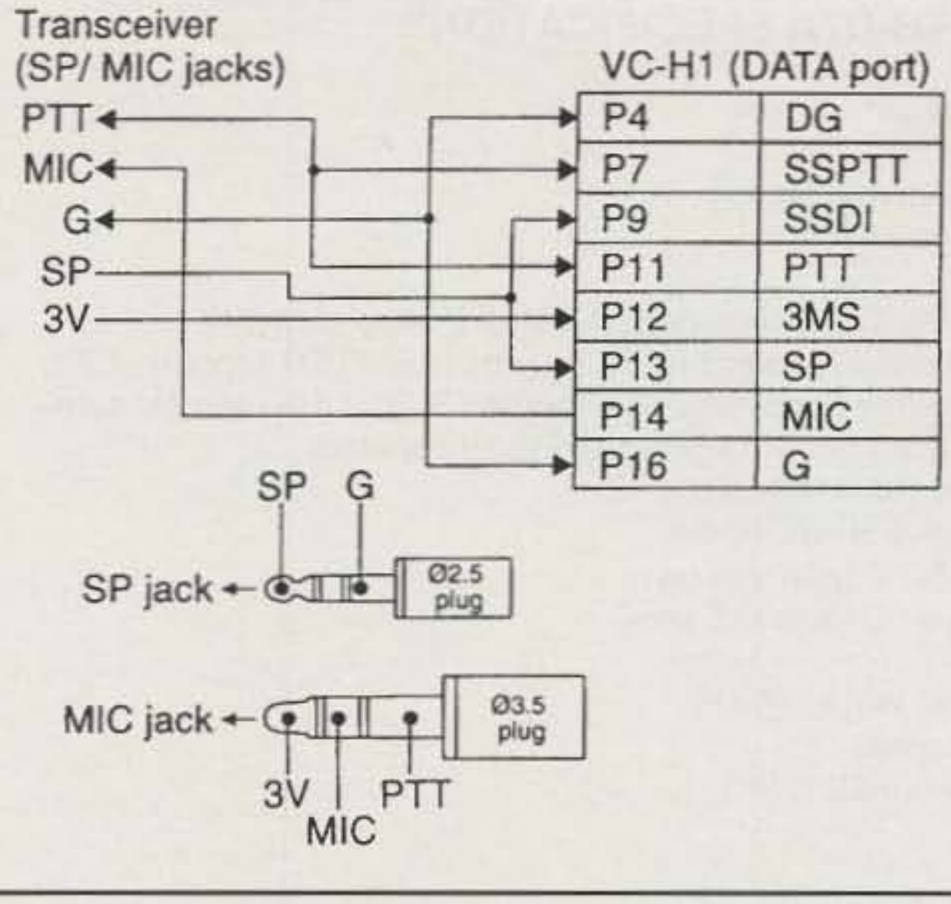

Fig. 3– The VC-H1 is easily connected to many handy transceivers using the configuration shown above. This cable is supplied with the VC-H1 and readily attaches to the Kenwood TH-D7A.

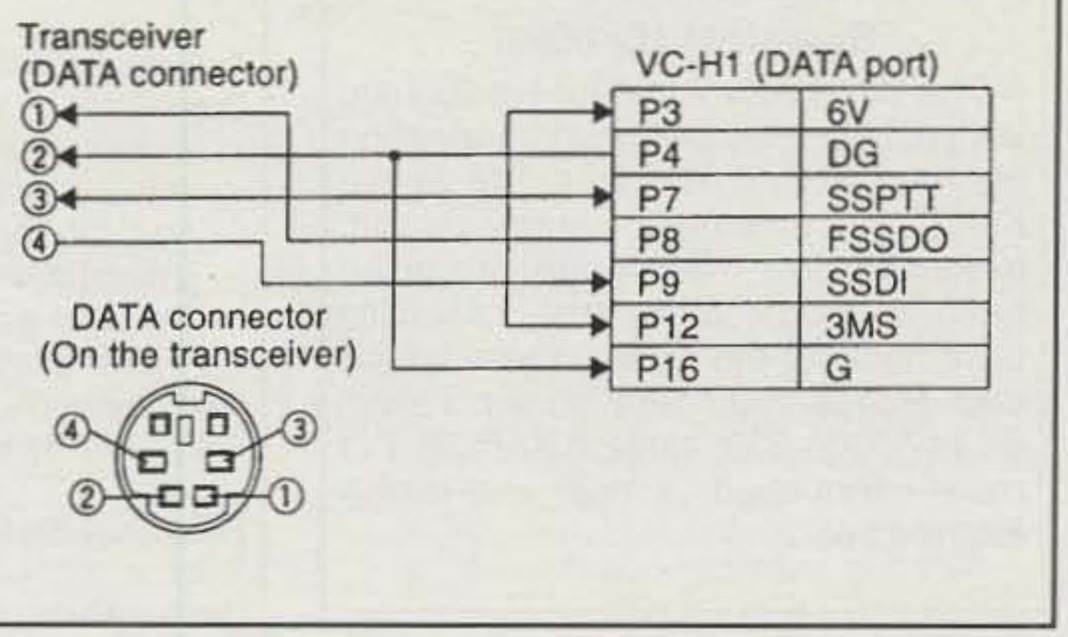

Fig. 4– Interfacing the VC-H1 to other Kenwood transceivers such as the TM-255, TM-455, TM-733, TM-V7, or the TM-G707 is easy with the optional Kenwood cable (PG-4T) shown here. Note that this interface attaches to the 6-pin mini DIN (data port) of these radios.

Turn off the transceiver and attach the Kenwood serial communications cable (part number PG-4W, DTE to DCE) between the computer (DB-9) serial comport and the TH-D7A "PC" port. The PG-4W cable should contain the signal lines as shown in fig. 2. This cable is available from Kenwood or an authorized Kenwood amateur radio dealer.

Turn on the TH-D7A. From the table of contents in the TH-D7A manual determine the page on which you will find the setup for packet radio operation. This section heading reads "Preparation Flow." In my documentation I am directed to page 54, where I learn how to implement the TNC mode. When we have configured the TH-D7A for TNC mode, we turn to our termi-

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RG8 MINI(X)95% BRAID UV RESISTANT JACKET 2.0dB/875 WATTS @ 30MHz ... .15/FT / .13/FT / .12/FT
RG58/U 95% BRAID UV RESISTANT JACKET 2.5dB/400 WATTS@ 30MHz ... .15/FT / .13/FT / .11/FT
RG58A/U STRD CENTER 95% TC BRD UV RESISTANT JKT 2.6dB/350 WATTS @ 30MHz ... .17/FT / .15/FT / .13/FT
RG214/U STRD SC 2 95% BRD NC/DB/UV JKT 1.2dB/1800WATTS @ 30MHz ... 25FT/UP 1.75/FT

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RG303/U SOLID SCCS 1-95% SILVER BRAID *Teflon*® JKT
8.6dB/1100WATTS @ 400MHz ... 25FT/UP 1.00/FT

COAX (75 OHM GROUP)

RG11A/U STRD BC (VP-66%) 95% BRAID NC/DB/UV JKT
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... 20/**100FT/UP** ... 13/**500FT** ... 12/**1000FT**
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1216 8/COND (2/12 6/16) BLK UV RES JKT. Recommended up to 500ft ... .78/FT / .74/FT / .70/FT
1806 18GA STRD 6/COND PVC JACKET Recommended for Yaesu Rotors ... .23/FT / .21/FT / .19/FT

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50FT RG213/U MIL-SPEC DIRECT BURIAL JKT 1.5 dB @ 50MHz ... 29.95/EA
25FT RG213/U MIL-SPEC DIRECT BURIAL JKT 1.5 dB @ 50MHz ... 19.95/EA
6FT RG213/U MIL-SPEC DIRECT BURIAL JKT 1.5 dB @ 50MHz ... 11.95/EA
3FT RG213/U MIL-SPEC DIRECT BURIAL JKT 1.5 dB @ 50MHz ... 9.95/EA
100FT RG8MINI(X) 95% BRD UV RES JKT 2.5dB @ 50MHz ... 24.95/EA
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Big Sandy ARC Swapfest/Hamfest

The Big Sandy Amateur Radio Club will sponsor their swapfest/hamfest on May 1st from 9 AM to 4 PM at the Fallsburg Community Center, Louisa, Kentucky, five miles north of Louisa Lake on Route 3 towards Yatesville Lake (look for the signs). There will be door prozes and hourly prizes. Talk-in on 147.390 +600, callsign K4PGA. For more information, e-mail: <wa4swf@foothills.net>.

TH-D7A SPECIFICATIONS

Antenna Impedance: 50 ohms
Current:
- Receive with no signals: Approx. 90 mA
- Battery Saver ON: Average 25 mA
- TNC ON: Approx. 115 mA
- Transmit with H, 13.8 V (DC IN): VHF(approx. 1.6A) UHF (approx. 1.7A)
- Transmit with H, 9.6 V (Battery Terminals): VHF(approx. 1.6A) UHF (approx. 1.7A)
- Transmit with H, 6.0 V (Battery Terminals): VHF(approx. 1.3A) UHF (approx. 1.4A)

Dimensions (W × H × D): 54.0 × 119.5 × 43.5 mm (w/PB-39 installed)
Frequency Range: VHF Band (144–148 MHz)
UHF Band (438–450 MHz)
Frequency Stability: –10 to +50°C (w/in ±10 ppm)
–20 to +60°C (w/in ±15 ppm)
Ground Method: Negative
Maximum frequency deviation: Within ±5 kHz
Microphone Impedance: 2 K ohms
Mode: F3E (FM), F1D (GMSK), F2D (FSK)
Modulation: Reactance
Power Output:
- H, 13.8V: VHF (6W) UHF (5.5W)
- H, 9.6V: approx. 5W
- H, 6.0V: VHF (approx. 2.5W) UHF (approx. 2.2W)
- L,6.0V: approx. 0.5W
- EL, 6.0V: approx. 50mW

Rated Voltage:
- External power supply (DC IN): 5.5 – 16.0 V (13.8 V)
- Battery Terminals: 4.5 – 15.0 V (6.0 V)

Spurious emissions (at high transmit power): –60 dB or less
Usable Temperature Range: –20°C to +60°C (–4°F to +140°)
Weight: Approx. 380g/13.4 oz. (w/PB-39 installed)
Receiver:
- 1st Intermediate Frequency
  VHF (38.85 MHz) UHF (45.05 MHz)
- 2nd Intermediate Frequency
  VHF (450 kHz) UHF (455 kHz)

Audio output (10% distortion):
- 9.6V (battery terminals): 450 mW or higher (8 ohms load)
- 6.0V (battery terminals): 300 mW or higher (8 ohms load)

Circuitry: Double conversion superheterodyne
Selectivity (–40 dB): 28 kHz or more
Selectivity (–6 dB): 12 kHz or more
Sensitivity (12 dB SINAD): 0.18 uV or less
Squelch sensitivity: 0.1 uV or less

nal program (communications software) and assure that we are communicating with the TH-D7A TNC. Our computer-to-TNC communications data rate should be defaulted to 9600 baud.

Set the terminal program (resident in the PC) parameters to:

Data rate (TNC to/from computer)—to 9600 baud
Data (word length)—8 bit
Stop bit—1 bit
Parity—none
Flow control—Xon/Xoff

My only disappointment using the TH-D7A integrated transceiver and TNC was the lack of a "transparent" mode in the internal TNC. This limits the combination to ASCII and text file transfers. Without a transparent mode, I was unable to send and receive binary and pictures files using terminal programs that implement (RTS and CTS) "hardware flow control."

The VC-H1 plus The TH-D7A: A Quantum Leap

The VC-H1 is an all new, exciting product to enhance your amateur radio hobby. Compact and easy to use, the VC-H1 is compatible with the TH-D7A and most FM VHF/UHF transceivers, including HF, FM, and SSB modes. The VC-H1 is easily connected to many other transceivers using the configuration shown in fig. 3. The cable is supplied with the VC-H1 and readily attaches to the Kenwood TH-D7A.

Interfacing the VC-H1 to other Kenwood transceivers such as the TM-255, TM-455, TM-733, TM-V7, or TM-G707 is easy when the optional Kenwood PG-4T cable is used (see fig. 4). Notice in fig. 4 that the input/output is made to the 6-pin Mini DIN (data port) of these radios. There are several other OEMs who use this type of connector. If you consider using the VC-H1 with other brands, be sure the data-port connections are the same. A connector kit to mate the VC-H1 to the Kenwood TS-570 or TS-870 is also available as an option. Contact your Kenwood dealer or customer service and ask for Kenwood option E59-0407-08.

Check this out! With the TH-D7A you can send and receive digital images *fast!* Seventeen seconds @9600 baud—it's easy and from almost anywhere. If you have a friend who has another station that has the TH-D7A and the VC-H1, you are in for a real treat. I cannot put into words the exhilaration I experienced when I saw the color picture scrolling onto the screen using the FM 9600 baud SSTV mode. Kenwood has a corner on the SSTV modes with the addition of this picture transfer mode.

For camping trips, Field Day, or disaster communication teams, this setup is just the ticket. Imagine sending images across town or across the world on VHF/ UHF (or HF). The VC-H1 integrates with your PC to store and label all your favorite images for future transmission with special software.

Here is a list of a few of the VC-H1 features:

- Small and compact
- AA alkaline or 110 volt AC adapter operation
- Operates all Slow Scan modes
- Callsign superimpose
- AM Mute
- Auto Power Off
- 1.8 inch color display
- Built-in speaker and microphone
- Transmits to another radio and PC (with special software)
- Removable head
- Accepts input from other camera or video devices

For more information on the TH-D7A and VC-H1, contact Kenwood Communications Corp., 2201 East Dominguez St., P.O. Box 22745, Long Beach, CA 90801-5745 (310-639-4200).

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Say You Saw It In CQ

BY JOHN DORR, K1AR

CONTEST CALENDAR

NEWS/VIEWS OF ON-THE-AIR COMPETITION

Strategic vs. Tactical Contest Operating

April's Contest Tip

Do you really study contest results (especially the ones you participate in), or are you the type who breezes through the numbers and puts the magazine in the pile across the room? I've found over the years that contest reports can truly be revealing about your own results—both good and bad! Try reading the next contest summary with the idea of seeking out areas of improvement. With the summer coming, there's no better time to begin thinking about antenna projects *and* getting those strategic juices flowing.

If you have the "fortune" of working in a professional position, I'm sure you've heard that all too familiar speech from your boss: "You need to think less tactically and more strategically!" Put another way, salesmen tend to be more tactical by nature. They're interested in closing the current deal right in front of their noses. That's how they get paid, for the most part. Marketing people, on the other hand, are more concerned with strategic direction of their companies. They focus on issues such as corporate identity, messaging, and product direction.

The parallels between business and contesting are compelling, however. In fact, as with most things in life, there's the tactical challenge of the moment and a strategic planning component that always needs to be considered. Contest operating is no exception. Let's explore the concept in a little more depth.

Thinking Tactically

What are some one of the more common thoughts that cross your mind while operating a contest? Let me suggest a few:

- I wonder how I'm doing compared to my competition?
- What is the rate meter saying in my contest logging program?
- Boy, I could sure use a cup of coffee!
- Should I be running now or looking for multipliers?
- Am I on the right band?
- I sure hope 10 meters opens today like it did yesterday!

Not only do these ideas fill your brain, but there are probably scores of others that emerge over the course of a contest weekend. And, from the standpoint of score maximization, they are good things to consider. Just as in business, there's value in thinking and operating tactically. After all, you can do all the planning in the world in preparing for a contest; you still need to call CQ and work guys.

2 Mitchell Pond Road, Windham, NH 03087
e-mail: K1AR@contesting.com

Calendar of Events

Mar. 27-28 CQ WW WPX SSB Contest
Apr. 3-4 EA RTTY Contest
Apr. 3-4 SP DX Contest
Apr. 9-11 Japan Int'l DX Contest (High Band)
Apr. 10-11 MARAC County Hunters
Apr.10-11 DIG QSO Party
Apr. 17 European Spring Sprint Contest
Apr. 17-18 Holyland DX Contest
Apr. 17-18 YU DX Contest
Apr. 17-19 Michigan QSO Party
Apr. 24-25 Helvetia Contest
Apr. 24-25 Florida QSO Party
Apr. 24-25 Ontario QSO Party
May 1-2 Connecticut QSO Party
May 1-2 Massachusetts QSO Party
May 1-2 ARI Int'l DX Contest
May 1-2 MARAC County Hunters Contest
May 8-9 A. Volta RTTY DX Contest
May 8-9 CQ-M International DX Contest
May 15 EU CW Spring Sprint
May 22-23 Texas QSO Party
May 22-23 Baltic Contest
May 29-30 CQ WW WPX CW Contest

Separating Winners From Participants

Unlike the tactical thoughts summarized above, I submit that there's another very important aspect of contesting—strategic operating. However, here's the bold statement. It's the strategic component of contesting that truly separates winning operations from contest participants. Let's take a closer look at the concept.

I believe that contest operators who think strategically before and during a contest ask an entirely different set of questions from those found above. Here are a few examples:

- How am I doing against the operating plan I established for myself before the contest?
- Am I discouraged because of band conditions, or is it my operating that's falling short this weekend? How can I compensate to achieve my plan?
- What opportunity exists to deploy one of the five to ten operating differentiators I traditionally establish for myself? For example, seeking unusual band openings, leveraging known station/geographical strengths, taking advantage of personal operating skills, etc., come to mind.
- Am I using the list of shortfalls from last year's contest as a guide to this year's event?
- What operating technique can I deploy right now that others may not be considering?

By now I hope that you're beginning to see the picture. Successful contest operating is much more than just sitting down in front of the radio and calling CQ. It's like almost everything else in life. Those who take it seriously and plan in advance will inevitably do better than others who simply "shoot from the hip." The most significant benefit of approaching contest operating this way is that your score can improve without adding a single antenna.

The Bottom Line

If you ask any successful contester that often-asked question "What's your real secret to winning?" you'll find a common thread in the response. For starters, most will tell you that there really isn't any secret to winning. Success in contest operating, like anything else, is largely based on experience, desire, and a bit of good luck. However, when the next big contest comes along, I'd like you to consider approaching it from a totally different angle. Focus the majority of your thinking away from rates and tally sheets, and begin to think strategically. Yes, I'm realistic that consideration of the strategic aspects of contest operating are not necessarily going to rocket your tribander-based station's scores into the leader box. However, I guarantee that you will improve. And, at the end of the day, that's one of the main reasons why we operate contests—to have fun and to improve our operating skills in a dramatic way.

I challenge you to sit down and compose your own list of strategic operating questions. Take a few minutes to consider how often you really think about that aspect of contesting when you operate. Remember that a strategic thinker in business is always a desired commodity that breeds success. There are more parallels between that reality and your contest results than you may think. Give it some thought; you'll be surprised at the results!

Final Comments

Have you had the chance to complete this year's *CQ* Contest Survey? Check it out

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CIRCLE 67 ON READER SERVICE CARD

in March *CQ*. Your participation will make for some interesting reading in the months to come!

Please remember to provide any submissions for the July column to me by May 1. More and more of you are catching on, but as you can imagine, you can really help with the accuracy of contest calendar information by submitting your contest announcements via electronic mail.

73, John, K1AR
e-mail: <K1AR@contesting.com>

EA RTTY Contest

1600Z Sat., to 1600Z Sun., Apr. 3–4

This is the 1999 edition of the Spanish RTTY Contest sponsored by U.R.E. It is open to participants worldwide on 80–10 meters.

Classes: Single operator, all bands and single band, Multi-Single, and SWL.

Exchange: Signal report and Spanish province (for EA stations). All others substitute *CQ* Zone for province.

Scoring: For non-EA stations: On 10–20 meters, credit 1 point for contacts in your continent, 2 points for QSOs outside your continent. On 40 and 80 meters, triple your QSO points (i.e., 3 within your continent, 6 outside your own continent). QSOs between stations in the same country are only valid for multiplier credit and have no QSO point value.

Multipliers: Credit EA provinces (maximum 52) and DXCC countries worked per band. The first QSO with an EA, EA6, EA8, and EA9 station, on each band, count for 2 multipliers (DXCC + province).

Final Score: Multiply total QSO points times multiplier.

Awards: Various certificates and plaques are available to the winners of each operating category.

Send your entries by June 30th to: EA RTTY Contest, c/o EA1MV, Antonio Alcolado, P.O. Box 240, 09400 Aranda de Duero (Burgos), Spain. E-mail logs may be sent (in ASCII format, only) to: <alcolado@redestb.es>.

Polish "SP" DX Contest

1500Z Sat., Apr. 3 to 1500Z Sun., Apr. 4

Sponsored by the Polski Zwiagek Krotkofalowcow (PZK), this one is on CW and SSB and is held the first weekend of April. It generates high operating activity by the SPs. Contest operation is on all bands 160–10 meters (no WARC bands).

Classes: Single operator, single and all band (CW, SSB, or mixed mode). Multi-operator, single transmitter (all band, both modes only), and SWL.

Exchange: Signal report plus a three-digit serial number. SP stations substitute their one-letter province abbreviation for the number.

Multiplier: Count the total number of Polish provinces worked (maximum of 49).

Scoring: Three points per QSO times the number of Polish provinces worked.

Awards: Certificates will be awarded to the high scores in each class per country.

All logs must be received no later than April 30th. Send your entries to: Polski Zwiazek Krotkofalowcow, Contest Committee, P.O. Box 320, 00-950, Warszawa, Poland or e-mail to: <spdxc-logs@writeme.com>.

YLRL DX to NA YL Contest

CW: Apr. 8–10 SSB: Apr. 22–24
1400Z Wednesday to 0200Z Friday

This is another popular YLRL sponsored contest open only to licensed women operators around the world.

Classes: Single operator only.

Exchange: QSO number, RS(T), and ARRL section/country. Entries in log must also show time, band, date, and transmitter power.

Frequencies: CW: 3540–3570, 7040–7070, 14040–14070, 21120–21150, 28180– 28210 kHz. SSB: 3940–3970, 7240–7290, 14250–14280, 21380–21410, 28280–28410 kHz.

Scoring: Phone and CW are entirely separate contests. DX YLs, including Alaska and Hawaii, may contact the North American Continent. A station may be counted as one point and worked once per band for credit. Multiply the number of QSOs by your total multiplier (sections/countries) for final score. You may apply a bonus multiplier of 1.5 if less than 150 watts is used at all times during the contest.

Awards: Various cups and plaques will be awarded to the category winners. In addition, certificates will be provided to all second- and third-place winners.

Logs are due 30 days after the conclusion of each contest. Mail your logs to: Nancy Hall, KC4IYD, P.O. Box 775, N. Olmsted, OH 44070-0775.

Japan Int'l DX CW Contest (High Band)

2300Z Fri. to 2300Z Sun., Apr. 9–11

The object for this one is for amateurs around the world to work as many JA stations in as many JA prefectures as possible. It is sponsored by *Five-Nine* magazine. The maximum operating period is 30 hours (except for JAs, who can use the full 48-hour period) with off periods longer than 60 minutes. This is the high band edition (others to follow in subsequent months); operation is limited to 20–10 meters.

Classes: Single operator high power, low power, all band, single band; multi-operator; marine mobile. All stations can use packet radio DX spotting.

Exchange: JA-RST and prefecture number (1–50). Others RST and *CQ* Zone.

Scoring: 20 and 15 meters 1 point per QSO; 10 meters 2 points. Multipliers are total prefectures worked per band (DXCC countries for JA). Final score is total QSO points times multiplier.

Awards: Plaques and awards will be sent to the winners in each class around the world. A special contest award will be offered to anyone working all Japanese prefectures during the contest period. E-mail entries are accepted, too. To obtain electronnic log instructions, send an e-mail to: <jidx-info@dumpty.nal.go.jp> (this address is only for information request) with the command **#get jidxelog.eng i**n the body of the message. Commands must start with the "#" character.

All logs must be postmarked no later than May 31st and should be sent to: JIDX HFCW Contest, c/o *Five-Nine* magazine, P.O. Box 59,

Say You Saw It In CQ

Kamata, Tokyo, 144 Japan. Contest results will be sent to anyone including one IRC and SAE.

MARAC County Hunters SSB Contest

0000Z Sat. Apr. 10 to 2400Z Sun. Apr. 11

The Mobile Amateur Radio Awards Club is sponsoring the 28th running of this event. Mobile and fixed operation from every county in the United States is welcome. Mobiles and portables may be worked each time they change counties or bands.

Exchange: RS(T), U.S. county and state (province/country for others).

Scoring: 1 point for fixed stations; 15 points for mobiles; US/VE contacts with DX countries are worth 5 points. Final score is computed by the total QSO points times the total number of U.S. counties worked.

Frequencies: 3880, 7240, 14270, 21340, 28340 kHz. Fixed stations should operate above the suggested frequencies to allow more freedom for mobiles to operate on clear frequencies.

Awards: Certificates will be awarded to winning fixed stations in each state/province/country; mobiles in each state operating in three or more counties with a minimum of 10 QSOs per county. MARAC plaques to the highest scoring first- and second-place mobile stations in the U.S., NA fixed station, and DX station.

Completed logs, summary sheets, and check sheets must be received by May 8th and go to: Bill Nash, WØOWY, 13212 N. 37th Ave., Phoenix, AZ 85029. Enclose a #10 SASE and two units of postage with your entry for a copy of the final results.

YU DX Contest

1200Z Sat. Apr. 17 to 1200Z Sun. Apr. 18

The Yugoslav Amateur Radio Association (SRJ) and the Yugoslav DX Club (YUDXC) invite amateurs around the world to participate in the 1998 YU DX Contest.

Classes: Single operator (SSB only, CW only, mixed modes), and Multi-single (the standard 10-minute rule applies to this category).

Exchange: RS(T) and ITU zone.

Scoring: QSOs with your ITU zone 1 point; QSOs with stations in your continent but different ITU zone 3 points; all others 5 points. Contacts are permitted with the same station on both modes.

Multiplier: ITU Zones and Yugoslav prefixes per band.

Final Scoring: Total QSO points times the total sum of multipliers worked per band.

Awards: Trophy cups will be awarded to the top YU and non-YU log. Certificates will also be awarded to geographic area winners.

All entries must be postmarked no later than 30 days after the contest. Logs should be sent to: YU DX Contest, P.O. Box 48, 11001 Beograd, Yugoslavia.

Swiss Helvetia Contest

1300Z Sat., Apr. 24 to 1300Z Sun., Apr. 25

This is a good chance to build up your Canton total for the Swiss Helvetia Award, which requires confirmation from all 26 Cantons.

Classes: Single operator (high power or

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QRP), multi-single, SWL. All entries are mixed-mode only.

Frequencies: Use 1.8–28 MHz (no WARC bands) on both phone and CW.

Exchange: RS(T) plus a three-digit serial number. Swiss stations will also include a two-letter abbreviation for their Canton.

Scoring: Only contacts with Swiss stations count. Each contact with an HB station is worth 3 points. You may only work a station once per band regardless of the mode.

Multiplier: The sum of the Cantons worked on each band (26 per band).

Final Score: Calculate your final score by multiplying your total QSO points by the sum of Cantons worked.

Awards: Certificates will be awarded to the top scorers in each country and each USA and VE call area.

Logging: Indicate a Canton in a separate column for each band the first time it is worked. Check your log for duplicates and include a summary sheet showing the scoring and your name and mailing address in block letters. Also include the usual signed declaration.

The mailing deadline for contest logs is May 31st. All logs are to be sent to: Nick Zinsstag, HB9DDZ, Salmendorfli 8, CH-5084, Rheinsulz, Switzerland.

Nebraska QSO Party

1700Z Sat. Apr. 24 to 1659Z Sun. Apr. 25

Help complete your 5BWAS by operating in this popular QSO party. This contest is for single operators only with operation allowed on all non-WARC HF bands, 160–10 meters. All operating modes are permitted.

Classes: Single operator, multi-single, mobile, and Novice/Tech.

Exchange: NE stations—RS(T) plus county (93 maximum). Non-NE stations—RS(T) plus US state, VE province, or DXCC country.

Scoring: Credit one point per QSO for SSB contacts; two points for CW. NE mobiles add 50 QSO points for each county operated from. NE portables add 100 QSO pts for operating from other than your resident county. NE mobiles may be worked again when they change counties for new points/mults. NE mobiles operating on county lines may be counted as only one QSO. Final score is calculated by multiplying total QSO points times multiplier.

Frequencies: CW—1805 kHz and 60 kHz up from lower band edge. SSB—1865, 3870, 7270, 14270, 21370, 28370, 146460 kHz. Novices operate 10 kHz up from lower band edge and 28360 kHz.

Awards: Five plaques are available for category winners in Nebraska, US, and overseas as well as Novice/Tech/Tech-Plus stations. Certificates will be awarded as appropriate.

Logs and a signed summary sheet must be postmarked no later than May 31st. Send all entries to: Nebraska QSO Party, P.O. Box 375, Elkhorn, NE 68022-0375. Enclose a #10 SASE for final results.

1999 Florida QSO Party (FQP)

1600–0159Z Sat., Apr. 24
1200–2159Z Sun., Apr. 25

This one is back and sponsored by the Florida Contest Group. Here's your chance for amateurs outside of the state of Florida to make contact with as many Florida stations as possible. Florida stations work everyone. Stations may operate the full 20 hours.

Classes: (A) Single operator: One person performs all operating and logging functions. Use of spotting nets is not permitted. Only one (1) transmitted signal on the air at any time.

(B) Multi-operator: Those obtaining any form of assistance, such as relief operators, loggers, or use of spotting nets. *Note:* Multi-operator stations do not have to remain on a band for 10 minutes before changing bands. (1) Multi-Single: Only one transmitted signal on the air at any time. (2) Multi-Multi: More than one transmitted signal on the air at any time. No simultaneous SSB/CW signals on one band at the same time.

(C) Mobile: Mobile is a station that is self-contained (radio, antenna, power source) capable of motion. Motion is optional. Mobile entrants may be either single operator or multi-operator.

(D) Novice/Technician: Novice or Technician licensees perform all operating and logging functions. There are three power output categories for all categories: (A) QRP—5W output or less, (B) Low Power—150W output or less, (C) High Power—more than 150W output. Logs not showing power output category will be listed as high power.

Modes: (A) Single operator, mobile, and Novice/Technician categories may operate: (1) Mixed mode (phone and CW), (2) Phone only, (3) CW only. (B) Multi-operator work mixed mode only.

Exchange: Florida stations send signal report and county. All others W/VE stations (including KH6/KL7) send signal report and state or province. DX stations (including KH2/KP4, etc.) send signal report and DXCC country.

Scoring: (A) QSO points: Each complete non-duplicate phone contact is worth 1 point. Each complete non-duplicate CW contact is worth 2 points. No partial contact credit. Duplicate contacts must be clearly identified and are worth zero points. Stations may be worked once per mode, per band (i.e., WC4E may be worked on both 20 CW and 20 SSB for credit).

Multipliers: For Florida stations, 50 states (including Florida); Canada MAR (VE1, VE2, VE9, VY2), NF (VO1, VO2), PQ (VE2), ON (VE3), MB (VE4), SK (VE5), AB (VE6), BC (VE7), NW (VE8), YT (VY1); DXCC countries (except the US, Canada, KH6, and KL7). A multiplier may be counted once per mode. Working NP4Z on CW and then on SSB is two Puerto Rican multipliers. All others work Florida counties (a maximum of 67). Florida mobile stations that change counties are considered to be a new station and may be contacted again for point and multiplier credit. Florida stations on a county line may be claimed as a multiplier for any or all of the counties they give in their exchange. A Florida county multiplier can be counted once per mode. Working W1YL in Hillsborough County on CW and then on SSB is two county multipliers.

Final Scoring: Multiply QSO points by total multipliers by the power multiplier (see below). Florida mobile operations must submit separate logs for each county activated; a mobile entrant's score will be the total points for all counties activated by that effort.

Power Multiplier: If all QSOs were made using 5W or less, multiply your score by 3; if all QSOs were made using less than 150W, multiply your score by 2; if any or all QSOs were

made using more than 150W, multiply your score by 1.

Frequencies: CW—3.535, 7.035, 14.035, 21.035, and 28.035 and 10 kHJ up for Novices/Technicians. Phone—3.860, 7.260, 14.260, 21.335, and 28.485. Look for SSB activity on the hour and CW on the half hour. Fixed stations are urged to call CQ above/below these frequencies to keep them clear for low-power mobile operations. No 160 meters, WARC, or VHF bands.

Awards: Certificates will be awarded to top scorers in each category from each Florida county, state, Canadian province, and DXCC country. Special awards may be awarded at the discretion of the Florida QSO Party Contest Committee.

Entries must be postmarked no later than 30 days after the end of the contest (May 25, 1999). No late entries can be accepted. Any logs (other than check logs) with over 100 QSOs are encouraged to submit their logs in computer-readable format. Any entrants who submit paper logs with more than 100 contacts must also include cross-check (dupe) sheets. You may submit your contest logs via e-mail to <FLQSOParty@aol.com>. Send your summary sheet file and your log file following the ARRL Suggested Standard File Format. You may submit your logs on diskettes instead of paper logs. The floppy diskette must be IBM compatible, MS-DOS formatted, 3.5 inch. Log information must be in an ASCII file. Contest logs (paper or diskette) may be submitted to: Florida Contest Group, c/o Jim White, K4OJ, 1508 W. Patterson St., Tampa, FL 33604. You may also receive entry forms (rules, summary sheet, log sheet, and county abbreviations) by mail. Please send a business-size SASE, to Florida Contest Group, c/o Jim White, K4OJ, 1508 W. Patterson St., Tampa, FL 33604, or obtain information at the FQP Web site at: <http://home1.gte.net/wd4ahz/fcg/ssqp.htm>.

Ontario QSO Party

1800Z Sat. Apr. 24 to 1800Z Sun. Apr. 25

Here is a fun contest sponsored by the Ontario DX Association.

Classes: Multi-operator, single operator low power (up to 150 watts on HF, up to 50 watts on VHF/UHF), single operator high power (over 150 watts on HF, and over 50 watts on VHF/UHF), single operator single band, mobile, HF QRP (5 watts and under), VHF/UHF FM QRP, CW, SSB, or mixed mode and SWL.

Exchange: Ontario stations send signal report and Ontario county, district, regional municipality, or city in the case of the amalgamated City of Toronto. Other stations send signal report and Canadian province/territory, U.S. state, or DXCC country.

Frequencies: (Phone/CW)—All HF bands 160–10 meters with the exception of the WARC bands (12, 17, and 30 meters) which by IARU agreement are contest-free. All VHF/UHF bands also. Suggested frequencies for QRP/mobile stations: SSB—1.870, 3.735, 3.860, 7.070, 7.260, 14.130, 14.265, 21.260, 28.360; CW—1.820, 3.520, 3.720, 7.020, 7.120, 14.020, 21.020, 21.120, 28.020; FM—52.540, 146.550, and 446.100. Operators may not use repeaters for the purpose of the contest. Operators should keep the 2 meter FM simplex calling frequency of 146.520 MHz clear. Operators may not use repeaters for the purpose of soliciting contacts.

Scoring: Ontario stations work everyone. Stations outside Ontario work only Ontario stations. Score 1 point for every station worked per band. Score 10 points for working VE3ODX and VA3RAC per band. Shortwave listeners log only Ontario stations. Work each station once per band whether CW or SSB. Ontario stations earn 1 multiplier point for each Ontario county, district, regional municipality, and the amalgamated City of Toronto worked on each band (see multiplier list), each Canadian province/territory, each U.S. state and DXCC country. Stations outside Ontario earn 1 multiplier point for each Ontario county, district, regional municipality and for the amalgamated City of Toronto worked on each band. Shortwave listeners use the same formula for multiplier points as stations outside of Ontario. Mobile and/or portable stations may be worked once per band from each Ontario county, district, or regional municipality from which they operate.

Mobile/Rover Bonus: Mobile/Rover stations add 300 points for each Ontario multiplier activated. To earn the mobile/rover bonus a mobile/rover station must make at least three contacts with three different stations from the multiplier.

Mobile/Rover Stations: Mobile/Rover stations may be worked once per band from each Ontario county, district, or regional municipality (city in the case of City of Toronto)from which they operate.

Awards: Certificates will be awarded to the top scorers in each category and to top scorers in each Ontario county, district, regional municipality, amalgamated City of Toronto, Canadian province/territory, U.S. state, and DXCC country. Each station making over 50 QSOs will qualify for an "Ontario QSO Party" button bearing your callsign. Operators at multi-operator stations making over 50 QSOs will also qualify. Other certificates may be awarded based on activity.

Entries should be postmarked no later than May 31, 1999. Send your logs to: Ontario QSO Party, Ontario DX Association, P.O. Box 161, Stn. A, Willowdale, Ontario M2N 5S8 Canada. Entries can be sent on disk or via the Internet in standard text file format. (Do not send logs in a word processing format and include your snail mail address). Send e-mail logs to: <ve3sre@rac.ca>.

If you qualify for an "Ontario QSO Party" badge please send $2.00 to help cover costs. Entry forms may be downloaded from the ODXA Web site at <http://www.durhamradio.ca/odxa> or send an e-mail note to <ve3sre@rac.ca> or send an SASE to the ODXA.

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NEWS OF COMMUNICATION AROUND THE WORLD

Palestine: A New One!

The DX Century Club (DXCC) added another new "entity" to the current-country list in February. On Feb. 1, 1999 the International Telecommunications Union (ITU) issued the callsign block of E4A–E4Z to the Palestine Authority. Based on this, the ARRL immediately added Palestine E4 to the list of current DXCC entities. This action was based on the revised DXCC country criteria that became effective last March.

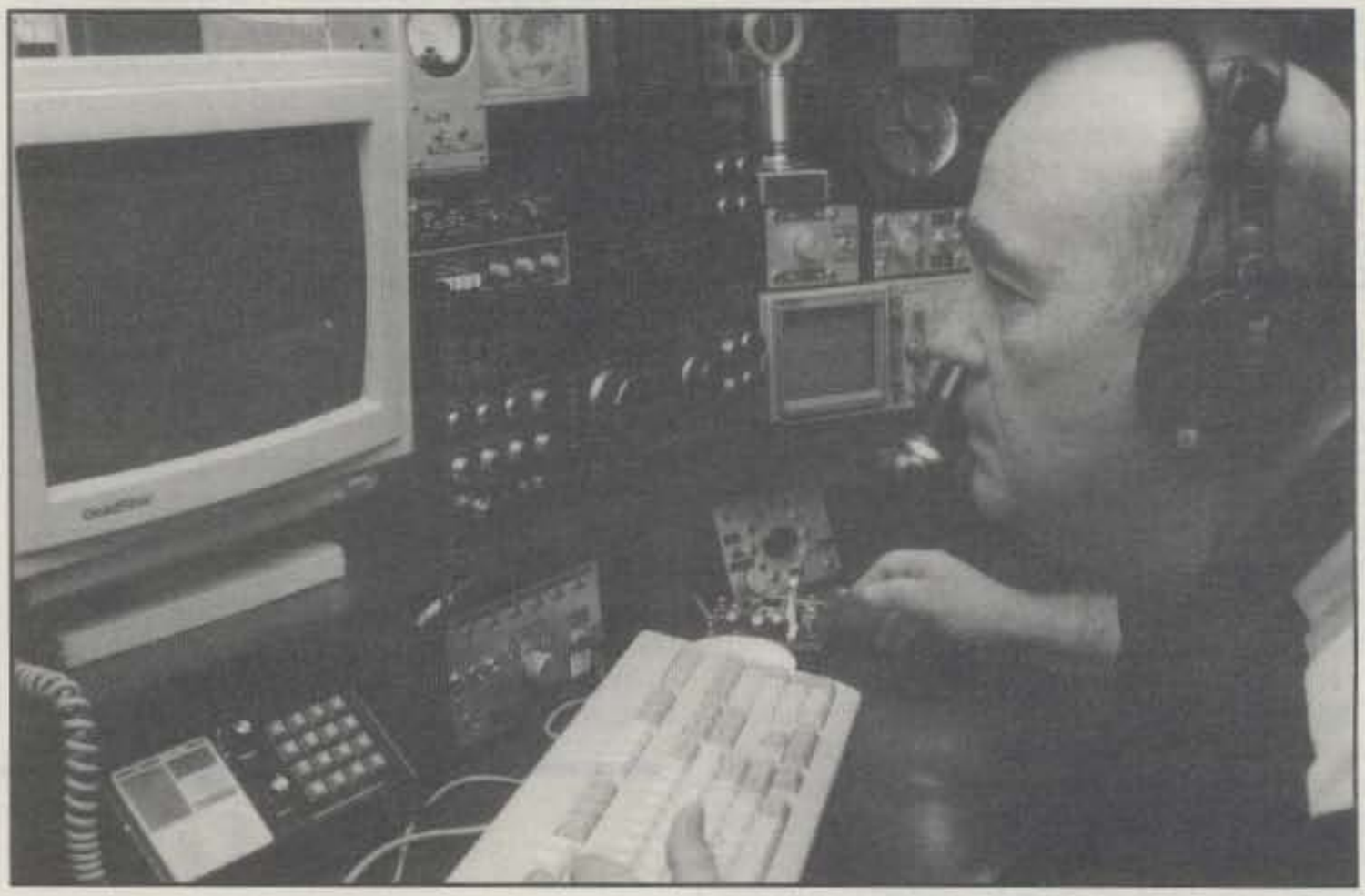
The ARRL DXCC news release read: "Under the current DXCC List Criteria, Section 1, this callsign allocation meets the requirement of paragraph b. Palestine will be added to the DXCC List effective October 1, 1999. Contacts made with E4 stations after February 1, 1999 will count for this new entity.

"Under the DXCC rules, contacts with the deleted entity of Palestine made prior to June 30, 1968 do not count for this entity. There is no commonality of territory or administration."

DXers have been waiting for several years for this action. Ever since Palestine won limited autonomy from Israel in 1993, DXers have anticipated that someday Palestine would have sufficient independence to qualify as a separate DXCC entity. In fact, several individuals and groups have operated from Palestine since the 1993 agreement, in the hope that Palestine would qualify for separate DXCC status under the then-vague Point 1 Government rules. At the time, the ARRL decided that Palestine lacked the autonomy necessary for separate DXCC status.

The event that led to this new status for Palestine was an ITU bulletin dated Feb. 1, 1999: "Following a request from the Palestinian Authority and in implementation of Resolution Plen/3 of the ITU Plenipotentiary Conference (Minneapolis 1998), the International Call Sign Series E4A–E4Z, in accordance with the provisions of No. S19.33 (2086) of the Radio Regulations, has been provisionally allocated to the Palestinian Authority. That provisional allocation is subject to confirmation by the following radiocommunication conference."

As it is with many of the ITU decisions, the allocation of the callsign block to Palestine is subject to confirmation at the next World Administrative Radio Conference (WARC). The DXCC rules specifically mention that if the provisional callsign assignment is *not* ratified by the full ITU, the entity (Palestine, in this case) will be removed from the DXCC list. Therefore, it is *possible* (but not likely) that Palestine will be a temporary DXCC entity. However, the ITU routinely ratifies such actions that happen between major WARCs, especially matters such as callsign assignments.



John, ON4UN, operating from Belgium. (ON6TT photo)

The addition of Palestine to the DXCC list clearly illustrates a couple of features of the revised DXCC rules. DXers should notice that there was no discussion of adding Palestine to the DXCC list. The matter wasn't referred to the DX Advisory Committee (DXAC), nor were DXers worldwide asked for their input. There was no reason for discussion, thanks to the

A group of Japanese amateurs operated from Palestine in 1994, but the operation was not accepted for DXCC credit.

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MIXED

4892 9A2AA	3424 N4MM	2966 YU7SF	2667 S53EO	2254 S58MU	1919 SM6CST	1628 JN3SAC	1327 W9IAL	1110 W2CF
4773 F9RM	3405 YU1AB	2940 K9BG	2660 4N7ZZ	2238 9A4RU	1875 HA9PP	1625 KØNL	1319 WT3W	1100 KB5OHT
4129 W2FXA	3390 I2PJA	2926 YU7BCD	2631 IK2ILH	2237 W6OUL	1871 DJ1YH	1607 OZ1ACB	1311 WB2AQC	1059 RAØFU
3891 EA2IA	3386 N9AF	2906 I2MQP	2606 KØDEQ	2229 K5UR	1851 VE4ACY	1591 W7CB	1307 NH6T	989 US7MM
3797 UA3FT	3364 SM3EVR	2834 WB2YQH	2546 SM6DHU	2219 F6IGF	1836 F5NBX	1580 I1-21171	1293 WØIZV	906 N3KR
3775 W1CU	3262 N5JR	2832 HA5NK	2512 JH8BOE	2169 W8UMR	1767 IØAOF	1499 YU1ZD	1264 VE6BF	798 K6UXO
3754 F2YT	3240 9A2NA	2831 KF2O	2484 K8LJG	2140 YU7JDE	1765 K5IID	1423 AA1KS	1223 VE6BMX	
3718 K6JG	3103 I1EEW	2787 W9HA	2376 HAØIT	2138 W4UW	1759 I2EAY	1389 KØKG	1207 W3EZ	
3623 N4NO	3059 PAØSNG	2776 W2ME	2281 N6JM	2019 GM4OBK	1746 PY2DBU	1378 Z32KV	1198 S52QM	
3554 N66JV	3050 WA8YTM	2776 I1POR	2264 K2XF	2018 N3XX	1732 LU8DY	1338 N1KC	1162 JR3TOE	
3472 VE3XN	2990 HA8XX	2745 I2EEW	2259 W9IL	2001 OE6CLD	1653 AE5B	1371 F6HMJ	1142 VE6FR	

SSB

4180 IØZV	2802 I2MQP	2383 WA8YTM	2033 IN3QCI	1681 YU7SF	1489 I3ZSX	1271 W2FKF	1002 N1KC	786 JH3SAC
3743 VE1YX	2772 N4NO	2380 I2EOW	1959 W4UW	1659 K8LJG	1451 IT9SVJ	1252 T30JH	965 DJ4GJ	778 N3DRO
3715 ZL3NS	2731 HA8XX	2378 KF2O	1906 K5UR	1650 HA5NK	1450 K2EEK	1229 YC2OK	954 EA1AX	703 VE6BMX
3476 F6DZU	2725 I1EEW	2360 EA5AT	1881 SM6DHU	1649 EA5CGU	1443 N3XX	1196 KØNL	936 I2EAY	697 I2VGW
3453 K6JG	2714 N5JR	2296 I8KCI	1867 OE6CLD	1590 KS4S	1396 W9IL	1145 K4CN	933 DF1IC	660 F5LIW
3384 I2PJA	2657 PAØSNG	2291 YU7BCD	1809 W8DY	1569 K3IXD	1395 EA5KY	1127 EA8AG	921 HA9PP	613 SM5DAC
2993 N4MM	2507 9A2NA	2281 KF7RU	1802 OE2EGL	1570 W6OUL	1377 LU5DV	1090 LU3HBO	919 CP1FF	608 LU3HL
2978 EA2IA	2487 UA3FT	2260 KD9OT	1760 HAØIT	1567 CT1BWW	1366 DF7HX	1061 KI7AO	896 JR3TOE	
2976 F2VX	2446 CT1AHU	2257 I1POR	1757 N6FX	1546 K8MDU	1353 K5IID	1061 WT3W	894 EA3EQT	
2935 EA7AJB	2434 LU8ESU	2213 EA1JG	1754 W2WC	1544 DK5WQ	1336 G4OBK	1030 NH6T	894 EA5DCL	
2921 OZ5EV	2401 PY4OY	2134 K5RPC	1741 KBØC	1525 W2ME	1299 SV3AQR	1028 DL8AAV	836 AG4W	
2827 I4CSP	2385 4X6DK	2131 CX6BZ	1714 K2XF	1518 AE5B	1288 I3UBL	1017 IK4HPU	792 EA5GMB	

CW

3912 WA2HZR	2674 YU7SF	2194 9A2NA	1927 SM6DHU	1750 K2XF	1514 EA5YU	1270 W9IL	1033 LU7EAR	823 VE6BMX
3537 N6JV	2479 G4UOL	2179 HA5NK	1927 N6FX	1730 IT9VDQ	1513 IK5TSS	1268 DJ4GJ	1006 9A3UF	820 K3WWP
3251 UA3FT	2468 W2ME	2124 JA9CWJ	1906 G4SSH	1711 LU2YA	1509 9A3SM	1217 AC5K	998 K2LUQ	815 WT3W
3176 N4NO	2465 VE7DP	2067 KA7T	1876 HAØIT	1694 N3XX	1482 EA7AAW	1211 I2MQP	993 HA9PP	741 N3NEO
3119 VE7CNE	2423 N5JR	2046 HA8XX	1871 OZ5UR	1641 G4OBK	1457 I2EAY	1175 EA2CIN	906 YU1TR	725 KØNL
2978 K6JG	2415 LZ1XL	1980 KF2O	1816 SM6CST	1626 DJ1YH	1411 SM5DAC	1156 4X6DK	884 PY4WS	685 K6UXO
2940 EA2IA	2409 N4MM	1973 G3VQO	1799 I7PXV	1603 IK3GER	1349 N1IA	1083 I2EOW	870 HB9CSM	678 IK8VRP
2926 YU7LS	2362 YU7BCD	1956 K8LJG	1798 W2WC	1599 EA6BD	1287 EA6AA	1058 DF6SW	847 NH6T	659 N1KC
2881 N4UU	2335 WA8YTM	1954 S58MU	1795 W1WAI	1590 JA1GRF	1271 LU3DSI	1042 W4UW	844 JK1AJX	603 OE6CLD
2811 K9QVB	2196 VR2UW	1954 TI4SU	1755 K5UR	1537 JN3SAC	1270 K5IID	1041 W9IAL	821 RAØFU	

revision of the DXCC country criteria last year. After several years of controversial decisions and some bad feelings among DXers, the ARRL decided to revise the DXCC "country" criteria to make the DXCC program easier to administrate. As well as fine-tuning some of the distance requirements, the League completely changed the Point 1 criterion, which covers political entities. Scrapping the previous criterion, which featured vague language about the degree of autonomy of an entity, the League opted for rules that eliminated much of the decision-making process for new entities, electing instead to put that power into other hands outside the ARRL. The new Point 1 criteria for new DXCC entities delegate this authority to the United Nations, the ITU, and the International Amateur Radio Union (IARU).

The revised rule states that an entity will be added to the DXCC list if it meets any one of the following three criteria: (a) is a UN Member State; (b) has been assigned a callsign prefix bloc by the ITU; or (c) has a separate IARU Member Society. This revised rule not only removed the ARRL from the middle of any political discussion about autonomy, it also puts the entire question of political independence in other hands.

The criterion continues to say that new entities satisfying one or more of the above conditions will be added to the DXCC list by administrative action, without reference to the DXAC. Thus, the ARRL was able to add Palestine to the DXCC list on the same day that the callsign allocation was announced.

In the case of the three other new entities added to the DXCC list under the

Mateiesz, son of SP5LKM, shows excellent taste in reading material.

revised rules, there were mileage questions that required a little research to determine whether the potential entities met the DXCC requirements. Thus, the two FOØs and H40 New Ones went through the DXAC for consideration. However, in the case of Palestine, there was no need for such deliberation; the new entity was added as soon as the call-sign bloc was allocated.

The new DXCC entity of Palestine is comprised of two separate pieces of land: the Gaza Strip and the West Bank. The Gaza Strip lies along the Mediterranean, while the West Bank is sandwiched between Jordan and Israel. Those DXers wishing to update their computer logging programs should use latitude 31 degrees, 40 minutes north, longitude 35 degrees east as a compromise location for the new entity. This is in CQ zone 20, ITU zone 39, on the Asian continent. Time is UTC plus two hours.

While the start date for the new entity is Feb. 1, 1999, cards for Palestine will not be accepted by the DXCC desk until October 1, 1999. Cards received before that date will be returned without action. This gives those DXers on the Honor Roll an extra year to work and confirm Palestine to maintain their Honor Roll status.

Note, however, that this is a *new* entity. Those DXers who have ZC6 confirmed prior to the 1968 deletion date still have to work the *new* Palestine. Those DXers who worked the various Palestine operations since 1993 also must work the new entity of Palestine *on or after* Feb. 1, 1999.

Palestine should not be a difficult country to work. There are no significant transportation problems involved in getting to the new entity, and the Palestine authority has demonstrated a willingness to grant operating permission on request. Look for one or more major operations from Palestine to give DXers everywhere a good shot at working this New One.

To gain a little perspective on this latest DXCC entity, we should review a little of the area's history. The city of Gaza is one of the oldest cities in the world, dating back to well before 3000 BC. (Nearby Jericho has been occupied for about 10,000 years!) Since its founding, Gaza has been occupied by a string of conquerors, including the Egyptian pharaohs, the Assyrians, Scythians, Babylonians, Persians, Romans, Muslims, Crusaders, Ottomans, British, and Israelis.

The British were in charge of Gaza, and the rest of the Palestinian Mandate, at the end of WW II, when the current DXCC program began. The British were assigned control of the area in 1918, taking over from the Ottoman Empire, which had ruled the region for the previous 400 years.

The WPX Program

SSB

2694 .....OK1DWC

CW

3003 .....OK1DWC

Mixed

1826 .....IZ5BAM
1827 .....W9BOK
1828 .....OK1DWC

CW: 350 OK1DWC. 400 KF4FP, OK1DWC. 450 WA2VQV, OK1DWC. 500 WA2VQV, 4XØ/G3WQU, OK1DWC. 550 WA2VQV, W4MS, OK1DWC. 600 WA2VQV, W4MS, OK1DWC. 650 W4MS, OK1DWC. 700 OK1DWC. 750 OK1DWC. 1800 S51NR. 1850 S51NR. 3900 UA3FT. 3950 UA3FT. 4000 UA3FT. 4050 UA3FT. 4100 UA3FT.

SSB: 350 OK1DWC. 400 UA1ZKF, OK1DWC. 450 OK1DWC. 500 OK1DWC. 850 WD8ANZ. 1200 N3XX. 1250 W4MS. 1300 W4MS. 1350 W4MS. 1400 W4MS. 1450 W4MS. 1500 W4MS. 1550 W4MS. 1750 N3XX. 2700 UA3FT. 2750 UA3FT. 2800 UA3FT. 2850 UA3FT. 2900 UA3FT. 3750 F6DZU.

Mixed: 450 W1LIC, W9BOK, OK1DWC. 500 W9BOK, OK1DWC. 550 OK1DWC. 600 OK1DWC. 650 OK1DWC. 700 OK1DWC. 750 OK1DWC. 800 OK1DWC. 850 WD6ANZ, OK1DWC. 900 WD8ANZ, OK1DWC. 950 S51U, OK1DWC. 1000 S51U. 1400 W4MS. 1450 W4MS. 1500 W4MS. 1550 W4MS. 1600 W4MS. 1650 W4MS. 1700 W4MS. 2100 N3XX. 2600 KS3F. 2700 HA5NK. 2750 HA5NK. 2800 HA5NK. 2850 HA5NK. 4300 UA3FT. 4350 UA3FT. 4400 UA3FT. 4450 UA3FT. 4500 UA3FT.

10 meters: N7JB
20 meters: OK1DWC
40 meters: DL6UAA, OK1DWC
80 meters: OK1DWC
160 meters: OK1DWC
Asia: OK1DWC
N. America: W9BOK
Eurpoe: W9BOK, OK1DWC

Award of Excellence Plaque Holders: K6JG, N4MM, W4CRW, K5UR, K2VV, VE3XN, DL1MD, DJ7CX, DL3RK, WB4SIJ, DL7AA, ON4QX, 9A2AA, OK3EA, OK1MP, N4NO, ZL3GQ, W4BQY, IØJX, WA1JMP, KØJN, W4VQ, KF2O, W8CNL, W1JR, F9RM, W5UR, CT1FL, W8RSW, WA4QMQ, W8ILC, VE7DP, K9BG, W1CU, G4BUE, N3ED, LU3YL/W4, NN4Q, KA3A, VE7WJ, VE7IG, N2AC, W9NUF, N4NX, SMØDJZ, DK5AD, WD9IIC, W3ARK, LA7JO, VK4SS, I8YRK, SMØAJU, N5TV, W6OUL, WB8ZRL, WA8YTM, SM6DHU, N4KE, I2UIY, I4EAT, VK9NS, DEØDXM, DK4SY, UR2QD, ABØP, FM5WD, I2DMK, SM6CST, VE1NG, I1JQJ, PY2DBU, HI8LC, KA5W, K3UA, HA8XX, K7LJ, SM3EVR, K2SHZ, UP1BZZ, EA7OH, K2POF, DJ4XA, IT9TQH, K2POA, N6JV, W2HG, ONL-4ØØ3, W5AWT, KBØG, HB9CSA, F6BVB, YU7SF, DF1SD, K7CU, I1POR, K9LJN, YBØTK, K9QFR, 9A2NA, W4UW, NXØI, WB4RUA, I6DQE, I1EEW, I8RFD, I3CRW, VE3MC, NE4F, KC8PG, F1HWB, ZP5JCY, KA5RNH, IV3PVD, CT1YH, ZS6EZ, KC7EM, YU1AB, IK2ILH, DEØDAQ, IQWXY, LU1DOW, N1IR, IV4GME, VE9RJ, WX3N, HB9AUT, KC6X, N6IBP, W5ODD, IØRIZ, I2MQP, F6HMJ, HB9DDZ, WØULU, K9XR, JAØSU, I5ZJK, I2EOW, IK2MRZ, KS4S, KA1CLV, KZ1R, CT4UW, KØIFL, WT3W, IN3NJB, S50A, IK1GPG, AA6WJ, W3AP. OE1EMN, W9IL, S53EO, DF7GK, I7PXV, S57J, EA8BM, DL1EY, KØDEQ, KUØA, DJ1YH, OE6CLD, VR2UW, 9A9R, UAØFZ, DJ3JSW, HB9BIN, N1KC, SM5DAC, RW9SG, WA3GNW, S51U, W4MS.

Award of Excellence Plaque Holders with 160 Meter Endorsement: K6JG, N4MM, W4CRW, N5UR, VE3XN, DL3RK, OKMP, N4NO, W4BQY, W4VQ, KF2O, W8CNL, W1JR, W5UR, W8RSW, W8ILC, G4BU, LU3YL/W4, NN4Q, VE7WJ, VE7IG, W9NUF, N4NX, SMØDJZ, DK5AD, W3ARK, LA7JO, SMØAJU, N5TV, W6OUL, N4KE, I2UIY, I4EAT, VK9NS, DEØDXM, UR1QD, AB9O, FM5WD, SM6CST, I1JQJ, PY2DBU, HI8LC, KA5W, K3UA, K7LJ, SM3EVR, UP1BZZ, K2POF, IT9TQH, N8JV, ONL-4ØØ3, W5AWT, KBØG, F6BVB, YU7SF, DF1SD, K7CU, I1POR, YBØTK, K9QFR, W4UW, NXØI, WB4RUA, I1EEW, ZP5JCY, KA5RNH, IV3PVD, CT1YH, ZS6EZ, YU1AB, IK4GME, WX3N, W5ODD, IØRIZ, I2MQP, F6HMJ, HB9DDZ, K9XR, JAØSU, I5ZJK, I2EOW, KS4S, KA1CLV, KØIFL, WT3W, IN3NJB, S5ØA, IK1GPG, AA6WJ, W3AP, S53EO, S57J, DL1EY, KØDEQ, DJ1YH, OE6CLE, HB9BIN, N1KC, SM5DAC, S51U.

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5Z4GD to DL8AAM
5Z4OO to DL8AAM
7Z1AB to KN4F
8Q7CC to JR2KDN
8Q7US to JR2KDN
9G1TB to WK6O
9G1WJ to K1SE
A35VR to WA2NHA
A61AH to KA5TQF
A71/GØWOH to KA5TQF
A92GD to K1SE
AY5BB to LU6EF
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BV9G to BV8BC
BV9O to BV8BC
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CN8GH to K1SE
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CQ5QF to CT1QF
CQ7BOH to CT1BOH
CR6SG to CT1TG
CR7M to CT1BOH
CSØCBI to CT1CBI
CS5QF to CT1QF
CS6CBI to CT1CBI
CT5QF to CT1QF
CT8CBI to CT1CBI
CT9F to CT3BM
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DU3NXE to W4NXE
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JT1X to HAØHW
JT1Z to K6VNX
KH7/KH6LW to KH7RS
KH7/N2EDQ to KH7RS
KH7/WØYR to AA9DX
KH9/N6MZ to N4XP
KP2/N8NX to KU9C
LU6Z to LU6EF
LU7X to LU6EF
LZ2UU to LZ1KDP
MØARC to G3LZQ
M1BCG to G3SWH
OJØ/OH6LI to OH6LI
OJØ/OH8AA to OH6LI
OT8T to ON4UN
OX3IPA to OZ5AAH
OY5IPA to OZ5AAH
PJ7/NØBSH to WW9DX
PJ8N to K1NA
PR1Z to PY1NEZ
PS1Z to PY1NEZ
PW5W to PP5LL
R6L to RU6LWZ
RJ5R to EY8CQ
RJ6K to EY8CQ
RJ6R to EY8CQ
RU6L to RU6LWZ
SV1DPJ/3 to SV1CIB
SV5/HA4GDO/P to HAØHW
SV5/OM3LA to OM1APD
T88II to KJ9I
T88LJ to JM1LJS
TI2JJP to TI2AOC
TJ1HP to F6FNU
TJ2US to NW8F
TLØR to PA1AW
TL8SC to K4UTE
UAØZBK to K1WY
UA1PBA to RK1PWA
UJ1K to EY8CQ
UJ5ØA to EY8CQ
UJ5ØD to EY8CQ
US9D to UT4UZ
V31JP to K8JP
V31MX to KØBCN
V31PH to AI5P
V7RTTY to AC4G
VK1TX to K1WY
VK9XM to KU9C
VP2M/K1CLN to K1CN
VP2M/KA1NTM to K1CN
VP2MDY to NW8F
VP5/W3ZNB to K4UTE
VP5NG to K1AA
VP5S to K4UTE
W4MR to AA4NC
WH7/K9NW to WW9DX
XU2C to 7L1MFS
XU5NRY to F5NRY
YAØA to K4UTE
YA2A to K4UTE
YA3A to K4UTE
YT8ØØFG to YUØSRJ
ZD8T to AC4IV
ZF2WP to PA3ERC
ZK1AZJ to KH8AZ
ZK1SKQ to DL6DK
ZV3A to PY3ACC
ZV3C to PY3CKO
ZY1NEZ to PY1NEZ
ZY1Z to PY1NEZ
5B4CW to Michel E. Kreitem, P.O. Box 1267, Limassol, Cyprus
9K2HS to Hamed al-Shuwaie, P.O. Box 27, 72461 Khaldiya, Kuwait
BA9GA to Jiang, P.O. Box 12, Lanzhou, China
BV/JH3GCN to Kiyohiro Yuge, P.O. Box 73, Taipei, Taiwan
CU3T to Uniao de Radioamadores Dos Acores, P.O. Box 140, P-9702 Angra do Heroismo, Terceira, Acores, Portugal
DS2KPB to Chul Soo Park, P.O. Box 63, Inchon 400-600, Korea
DU3BS to Bong C. So, 248 Casmor Ph. 1, Mabiga, Mabalacat, Pampanga 2010, Philippines
HP1XBG to Michael McLaughlin, PSC 4 Box 278, APO AA 34004
J69EB to John C. Joseph, P.O. Box CH24C, Choiseul, St. Lucia
PJ9/KF8OY to Roger W. Macdonald, 12977 Sue Dee Lane, South Lyon, MI 48178
SV1APF to Kostas Fatoypos, Andreadou 2, GR-111 45 Athens, Greece
SV5CJN to Drosos Skotis, 5, Kosma Etolou str., GR-851 00 Rhodos, Greece
SV9/SV1CID to Konstantinos Bakolitsas, Papastratou 42, GR-301 00 Agrinio, Greece
TG9AMD to Dani Eduardo Ardon, P.O. Box 2846, Correo Central, Guatemala, Guatemala
VU2JHM to Lion Ajoy, "Kshitija", opp. Geetanjali Theatre, 5-Cross, Malleswaram, Bangalore 560 003, India
VU2NFS to Nafisa Shikari, 52A Asraf Apartments, Gangabaudi Road, Mazgaon, Mumbai (Bombay) 400 010, India
VU2SE to S. R. Subramanyam, 137, III Main Road, Ganganagar Layout, Bangalore 560 032, India
YC1YCF to Yoyon Suryana, Perum Margahayu C 88, Bekasi 17113, Indonesia
YC3JPS to Sumarno, P.O. Box 4025, Surabaya 60401, Indonesia
ZA/IK7VJP to Mastroviti Loreto, Via Magrone 9, I-70054 Giovinazzo (BA), Italy
ZA1FD to Fatos Demeti, P.O. Box 1439, Tirana, Albania

The table of QSL managers is courtesy of John Shelton, K1XN, editor of The GOLIST, P.O. Box 3071, Paris TN 38242 (phone 901-641-0109; e-mail: <golist@wk.net>.

However, the British were reluctant occupiers of Palestine, and didn't really want to be the arbitrators of the increasing frictions between the Palestinians and Jews seeking to establish a homeland in the area. The United Nations voted in 1947 to divide the Palestinian Mandate into separate Arab and Jewish states.

Thus, from the post WW II start of the current DXCC program, until the British left in mid-1948, contacts with amateurs in the area counted for the DXCC country of Palestine. The ZC6 prefix was assigned by the British to the Mandate.

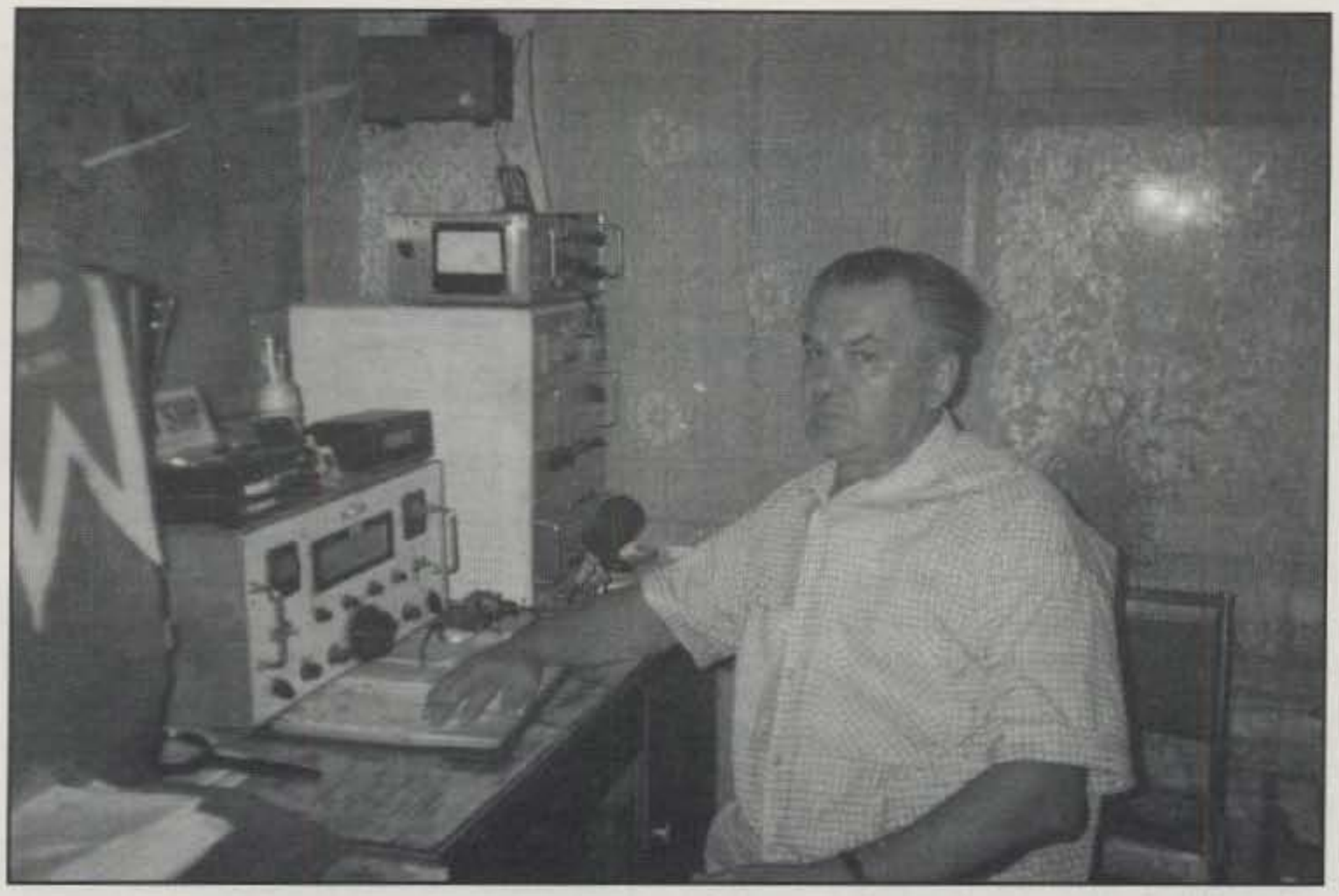
When the British pulled out of Palestine, the Jews in the area unilaterally proclaimed themselves the State of Israel, with territory amounting to about half of the Palestinian Mandate, along the lines of the 1947 UN vote. Armies from the adjacent Arab states immediately attacked the new nation, the first of many Arab-Israeli armed conflicts. When the two sides agreed to an armistice in 1949, Israel had increased in size by about 30%, thanks to its success on the battlefield. That war caused more than 700,000 Arab refugees to flee what was now Israel, many into the Gaza Strip. The Israelis confiscated the property that the refugees left behind, further infuriating the Arab Palestinians.

Neighboring Egypt annexed the Gaza Strip, but never granted Egyptian citizenship to the refugees nor to the original inhabitants of the region. The Arab Palestinians were left stateless, in refugee camps for the most part, and without any real government. The United Nations provided some relief efforts in the areas not under Israeli control. In terms of amateur radio, operations were conducted under UN licensing, with both ZC6 and 4X callsign prefixes. (Technically, neither prefix was correct, as the British no longer had any authority over the area, and neither was it, with the exception of half of Jerusalem, Israeli territory.)

In 1956 Israel conquered the Gaza Strip, as well as the entire Sinai Peninsula, in about a week. Gaza was under Israeli occupation for several months before pressure from the United Nations made Israel withdraw to its 1949 borders and return Gaza and the Sinai to the Egyptians. Once again amateur operation from Gaza was under UN control. While most of the DXCC credits for Palestine were for contacts with stations in the Israeli half of Jerusalem, the last DXCC-accredited operation from Palestine was in the summer of 1965, when Gus Browning, W4BPD, and Ami Shami, 4X4DK, operated as **4X1DK** for the UN's communications headquarters.

The Israelis again conquered Gaza and the Sinai in the Six-Day War in June 1967. This time the Israelis had no intention of relinquishing control of the conquered lands, and stated so. This led to the deletion of the DXCC country listing of Palestine, effective June 30, 1968. The announcement of the deletion in the July 1968 issue of *QST* stated that Palestine,

Say You Saw It In CQ



Anatol Kucherenko, UT5HP, seeks a sponsor to send him CQ magazine.

comprised of the UN Truce Area bordering on Israel, no longer existed and therefore was deleted. Any amateur operations from the Israeli-occupied regions would be under the control of Israel, with a 4X/4Z callsign, and count for Israel for DXCC purposes.

Skipping over countless attempts to resolve this conflict by political means, and the 1973 attempt to do so with force of arms, we come to the May 1994 Agreement between the government of the State of Israel and the Palestine Liberation Organization (PLO), the UN-recognized representative of the Palestinian people. (Israel fought against having the PLO represent the Palestinians because the charter of the PLO calls for armed struggle to eliminate the "illegal state" of Israel.)

Under the Agreement, Israel would gradually withdraw its military forces from Gaza (and the Jericho region), and turn control of the territories over to the Palestine Authority. When this did come to pass, this produced the first Palestinian state under Palestinian control for some 3000 years!

JY1 Silent Key

In early February the ARRL issued the following news release: "Radio amateurs around the world joined in mourning the death over the weekend of Jordan's King Hussein, JY1. Hussein, 63, died Sunday morning [Feb. 7]. The Middle East's longest reigning ruler, he'd been Jordan's king for 47 years, taking the throne when he was just a teenager. His son, Abdullah, 37, succeeds him. . . .

"Hussein was a life member of the ARRL. ARRL Executive Vice President David Sumner, K1ZZ, called him 'an enthusiastic radio amateur whose support was invaluable to us in obtaining new amateur bands at the 1979 World Administrative Radio Conference.' Sumner recalled that in May 1979, International Amateur Radio Union President Noel Eaton, VE3CJ, was invited to Amman to meet with King Hussein.

"'Jordan's support of the Amateur Service was much in evidence at the conference that fall, and was a crucial element in our success,' Sumner said. The WARC-79 resulted in Amateur Radio's gaining the 30, 17, and 12 meter bands. That same year, JY1 was featured in the film *The World of Amateur Radio.* Hussein regarded his 1983 contact with Owen Garriott, W5LFL, on board the Space Shuttle Columbia, as a high point in his Amateur Radio activity.

"King Hussein also participated in the historic 1995 joint Israel-Jordan JY74X operation on Mt. Nebo, where hams from both countries participated in a Field Day-like operation. The King put in appearances both on the air and in person, much to the delight of the participants and those waiting to work him and JY74X.

"Hussein's friend Bruce 'Blackie' Blackburn, W4TA/JY9BB, of St. Petersburg, Florida, called him 'one of the world's most respected amateurs' and recounted many stories about King Hussein as a person and an avid Amateur Radio operator. 'He was a wonderful guy, interested in everything and everyone,' he said.

"Blackburn said King Hussein 'promoted Amateur Radio to the hilt in Jordan' and saw to it that Amateur Radio classes were instituted in elementary schools. King Hussein also dropped in on meetings of the Royal Jordan Radio Amateur Society in Amman. King Hussein also was involved

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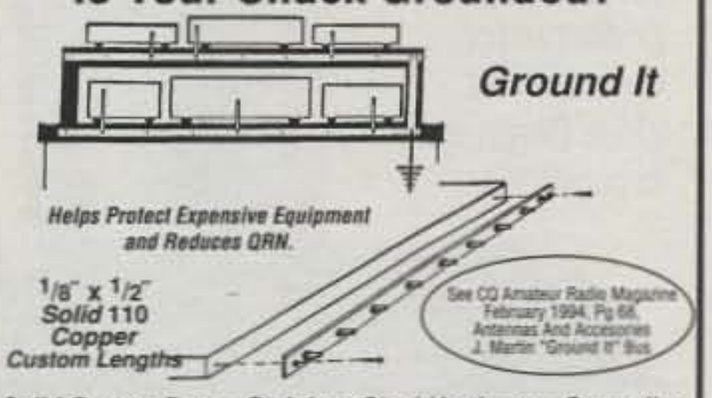

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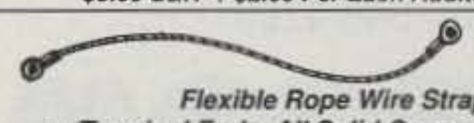

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with the early satellite experiments.

"All members of the Jordanian royal family automatically have Amateur Radio privileges in Jordan. Although the new king does not appear to have a callsign, King Hussein's widow—the American-born Queen Noor—is JY1NH. King Hussein's brother, the former Crown Prince Hassan, is JY2HT, while his cousin, Prince Raad, JY2RZ, is chairman of the Royal Jordan Radio Amateur Society."

In common with many other amateurs, I distinctly remember my contact with JY1. I was running a pile-up of Europeans from my home in Montserrat when a loud "JY1" easily broke through. I responded with my name and signal report. JY1 returned, "Nice to meet you, Chod. My name is Hussein, and you're 5 and 9 in Jordan." He went on to describe his station, and asked for my QSL route! "You're my first VP2M," he said. A couple of days later, his impressive QSL card arrived at my manager's mailbox, complete with SASE and a request to "PSE QSL."

My favorite JY1 story is at least third-hand, but reflects the down-to-earth on-the-air attitude of the king. In a net setting, an obviously new DXer called JY1, and asked for the rest of his callsign. Hussein replied that JY1 was his complete call. "Wow," the new DXer said. "Neat call. You must know somebody." "Well," Hussein replied, "I am the king."

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CIRCLE 90 ON READER SERVICE CARD

Upcoming DX Activity

Charlie, K4VUD, will operate from the Far East over the next two months. He is currently in Thailand, operating as **HSØZCW**, until April 5. He then goes to Nepal April 7–May 17. He will be making side trips to Tibet, China, and Bhutan during this time, but does not expect to be on the air on these trips. He returns to Thailand May 18–June 2. QSL home call.

Bill, K4LTA, is currently active from Grenada J3. QSL home call.

Mart, DL6UAA, is now active from Mauritius 3B8.

Finally, the Ontario DX Association will mark its 25th anniversary with a Special Event station under the callsign **XL3D** March 25–April 25. This station will count as one of the two 10-point stations during the Ontario QSO Party April 24–25. QSL to the Ontario DX Association, P.O. Box 161, Station A, Willowdale, Ontario Canada 9M2N 5S8, or via the Canadian bureau via VE3ODX or VE3SRE.

Planning well ahead? Joe, W6OVO, notes that the Republic of Kiribati has maneuvered its way into being the first country to mark the year 2000. Kiribati stretched the international date line around its eastern islands, including Christmas Island T32. There are no problems getting a T32 license (I am T32AW), nor are there transportation or accommodation problems. There is a weekly flight from Hawaii, and the Captain Cook hotel is almost always available. Maybe some DXers can organize a year-2000 DXpedition to Christmas over Jan. 1, 2000.

"The Daily DX" is a daily electronic DX newsletter and provides much of the DXpedition information for this column. For more information on "The Daily DX," see <www.dailyDX.com> or call editor Bernie McClenny, W3UR, at 301-854-5650.

DX Gatherings

The **International DX Convention** in Fresno, California, is April 9–11 at the Radisson Hotel and Conference Center, 2233 Ventura St., in downtown Fresno. Registration, including the Saturday banquet and Sunday brunch, is US$65, payable to the NCDXC Convention 99, at P.O. Box 60307, Sunnyvale, CA 94088-0307. Indicate your choice of chicken, prime rib, or salmon for dinner. Hotel reservations must be made directly with the hotel, which was previously called the Holiday Inn. Call the hotel at 209-268-1000. For more information, check out the convention site at <www.amateur-radio.org/ncDXc.htm>. The Northern California DX Club is the sponsor for this year's event. I'll be there. Will you?

1999 SWODXA DX Dinner: The Southwest Ohio DX Association is pleased to announce the 14th Annual DX Dinner to be held on Friday, May 14, 1999 at the Crowne Plaza Hotel, Dayton, Ohio. There will be a cash bar at 6:30 PM and dinner at 7:15 PM. Tickets are $31 and must be purchased in advance. Groups wishing to sit together must order as a group. A table seats eight. Please make your check or money order payable to SWODXA and send an SASE for ticket return. Seats will be assigned in the order that requests are received. Seats will be assigned on 20 March 1999. Seating is limited. Please order tickets from Steven A. Caesar, NH7C, P.O. Box 273, Beavercreek, OH 45434. For information on the dinner, contact Steve Bolia, N8BJQ, at 937-788-2803 or e-mail to <n8bjq@erinet.com>.

And for those planning significantly ahead, the eighth **New Orleans International DX Convention** is Aug. 27–28. Save the dates; more details to come.

DX Club Officers

The 1999 officers and directors for the Southern California DX Club (SCDXC) are as follows: President Harvey Laidman, W8DX; Vice President Jim Zimmerman, N6KZ; Secretary Chuck Constantine, KR6C; Treasurer Skip Bolnick, KJ6Y; Membership Chairman Harvey Shore, K6EXO; Director Cathy Gardenas, KF6LFB; Director Rich Bongeorno, WU6T; Ex Officio Will Angenent, K6NDV. For more information about the SCDXC check out their home page at <http://www.scDXc.org>.

The 1999 officers of the Madison DX Club of Madison, Wisconsin are: President Roger Deicher, K9EMG; Vice President Bob Sauvan, WT9Q; and Secretary-Treasurer Kevin Graniero, KF9AQ.

73, Chod, VP2ML

CQ DX Awards Program

CW

986 .....K6GJ

SSB Endorsements

320	W6DN/330	320	I8KCI/329
320	NØFW/330	320	PAØXPQ/328
320	K5OVC/330	320	VE2WY/328
320	N4CH/329	300	WA4ZZ/300
320	ZL1AGO/329	275	WØIKD/279

CW Endorsements

320	W6DN/330	320	N4CH/320
320	K6GJ/328	310	NØFW/317
320	PAØXPQ/328	300	WG5G/QRPp/307

RTTY Endorsements

250 .....PAØXPQ/272

Total number of active countries is 330. The basic award fee for subscribers to *CQ* is $4. For non-subscribers, it is $10. In order to qualify for the reduced subscriber rate, please enclose your latest *CQ* mailing label with your application. Endorsement stickers are $1.00. Updates not involving the issuance of a sticker are made free when an SASE is enclosed for confirmation of total. Rules and application forms for the CQ DX Awards Program may be obtained by sending a business-size, No. 10 envelope, self-addressed and stamped, to CQ DX Awards Manager, Billy Williams, N4UF, Box 9673, Jacksonville, FL 32208 U.S.A. DX stations must include extra postage for airmail reply. Please make all checks payable to the awards manager.

BY TED MELINOSKY, K1BV

AWARDS

NEWS OF CERTIFICATE AND AWARD COLLECTING

This month we present a little background on Jay Lowers, K6RLS, USA-CA All Counties #960, October 28, 1998. Jay was born in Milwaukee, Wisconsin, and moved to California at the age of eight in 1944. He and his wife Dixie raised four children.

Jay got his Novice license in 1959, his Tech license in 1964, and his General shortly after that. He worked for General Telephone for 14 years as an installer, repairman, PBX installer and repair, in the central office, and finished in the mobile radio department. He then went to work for ITT, retiring in 1991 from ITT at Vandenberg Air Force Base in California as a Communication Engineer. Of the 25 years with ITT, 14 months were spent on an Apollo tracking ship. He was at sea for the Apollo 7 and 8 shots and maintained the Inter-Com and Telephone systems and all ship-to-shore cabling.

Jay was a baseball scout for 10 years, scouting for clubs in Atlanta, San Diego, and Montreal. He moved from Santa Maria, California to Apache Junction, Arizona in 1992, and got started in CH with the help of KA7AKJ and W7LQT. His rig is a Kenwood 450S with TL-922A linear and KT-34A beam up 55 feet. Awards achieved so far are DXCC, WAS, WAC, and getting all counties for the first time around. He has only 50 more to go for bingo! Jay is also a 10-10 member and enjoys collecting sets of baseball cards.

Plans include moving to Lake Havasu City. When Jay takes down and disconnects all his equipment, he plans to put the rig in his van and run mobile for a while.

Electronic Confirmations

Several county hunters have proposed that the USA-CA rules be modified so as to allow the voluntary use of Electronic Confirmations. Reasons for the change include controlling the high cost of postage and reducing paperwork in both applying for and confirming contacts. Basically, the station that wants the confirmation will send an e-mail message to the mobile and this e-mail will contain a section allowing all the pertinent QSO information to be confirmed. If the contact is valid, the mobile station, upon checking the data, may respond by returning the message to the requesting station with an indication that the contact was valid. The requesting station will maintain a copy of the e-mail and if this is one of the contacts requested for checking in the USA-CA process, will send the original of the e-mail to the custodian. May I please have your comments on this proposal?

65 Glebe Road, Spofford, NH 03462-4411
e-mail: k1bv@top.monad.net

USA-CA Special Honor Roll

Correction: Jay Lowers, K6RLS,*
USA-CA All Counties #960
October 28, 1998

Orville Duecker, NKØN,
USA-CA All Counties #968
January 9, 1999

**The February Special Honor Roll should be corrected to show that K6RLS's name is Jay Lowers. The name shown, Chuck Imsande earned USA-CA #959.*

USA-CA Honor Roll

500

NKØN	3058
K6TV	3059
DL9CFD	3060

1000

NKØN	1502

1500

NØZA	1250
NKØN	1251

2000

NØZA	1151
NKØN	1152

2500

NKØN	1073
K1BV	1074

3000

NKØN	985

The total number of counties for credit for the United States of America Counties Award is 3076. The basic award fee for subscribers is $4.00. For nonsubscribers it is $10.00. To qualify for the special subscriber rate, please send a recent *CQ* mailing label with your application. Initial application may be submitted in the USA-CA Record Book, which may be obtained from *CQ* Magazine, 25 Newbridge Road, Hicksville, NY 11801 USA for $2.50, or by a PC-printed computer listing which is in alphabetical order by state and county within the state. To be eligible for the USA-CA Award, applicants must comply with the rules of the program as set forth in the revised USA-CA Rules and Program dated March 1, 1997. A complete copy of the rules may be obtained by sending an SASE to Ted Melinosky, K1BV, 65 Glebe Road, Spofford, NH 03462-4411 USA. DX stations must include extra postage for airmail reply.

The Danish Islands Award

The very successful IOTA series has encouraged a number of country-specific island awards. Denmark is a relatively recent entry in this arena. One advantage for the sponsors is that they can count islands and island groups differently than IOTA, which increases the total number of eligible islands considerably.

This award is available to all amateurs and SWLs who submit proof of having contacted or heard Danish islands on or after 1 Jan. 1997. All bands and modes are accepted, but the use of repeaters is not allowed. Danish islands are grouped into five major areas, some of which have the status of IOTA islands. They are:

EU-029—southern part of Kattegat
EU-030—Baltic Sea
EU-088—northern part of Kattegat
EU-125—North Sea
— Nordjylland and islands in Limforden

The island list can be had from the sponsor for an SASE or may be downloaded from the Internet at: <http://home7.inet.tele.dk/oz3fyn> or <http://www.edr.dk>.

The award is issued in three classes:

1. Basic: One contact/SWL with each of the 5 island groups.

2. Junior: 10 different islands in the 5 island groups.

3. Master: 25 different islands in the 5 island groups.

Send GCR list and fee of 50 DKK, $US10, or 10 IRCs. Endorsements for higher levels are 10 DKK, $US2, or 2 IRCs each. Apply to: Jens Palle Moreau Jorgensen, OZ5MJ, J'gerbakken 13, DK-5260 Odense S., Denmark.

The Danish Islands Award is offered to all amateurs and SWLs who submit proof of having contacted or heard Danish islands on or after 1 Jan. 1997.

Macedonia's Goce Delcev Award

There have been several articles written on the DX reflectors and in columns in past months about the difficulties of getting cards from the Macedonian Bureau. Z3 isn't an extremely rare country, but getting the cards is the challenge. With that in mind, here are the rules for an award that requires working and getting cards from

No matter how you look at it, CQ Contest is the contester's magazine. We've assembled some of the best contesters in the world to produce a publication that's informative and fun to read. Edited by Bob Cox, K3EST, it offers fascinating articles from fellow contesters OH2MM, N6KT, S50A, I2UIY, W3ZZ, KU2Q, K3LR and others!

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VISA

The Goce Delcev Award from Radio Club "Golak," Macedonia.

relatively large numbers of Macedonians. And not just receiving the cards—you have to send them back for checking. This is one of those rare awards that requires that the cards be sent, which just proves that award hunting sometimes can be a challenge!

Contact Z3 stations. Europeans need 15 different, all others 10 different. If worked, Z37FBS counts for 3 contacts. Send log extract, the QSL cards, and fee of $US3, DM5, or 6 IRC's to: Radio Club "Golak", P.O. Box 81, 92320 Delcevo, Macedonia. (Sponsor e-mail: <mbide@soros.org.mk>).

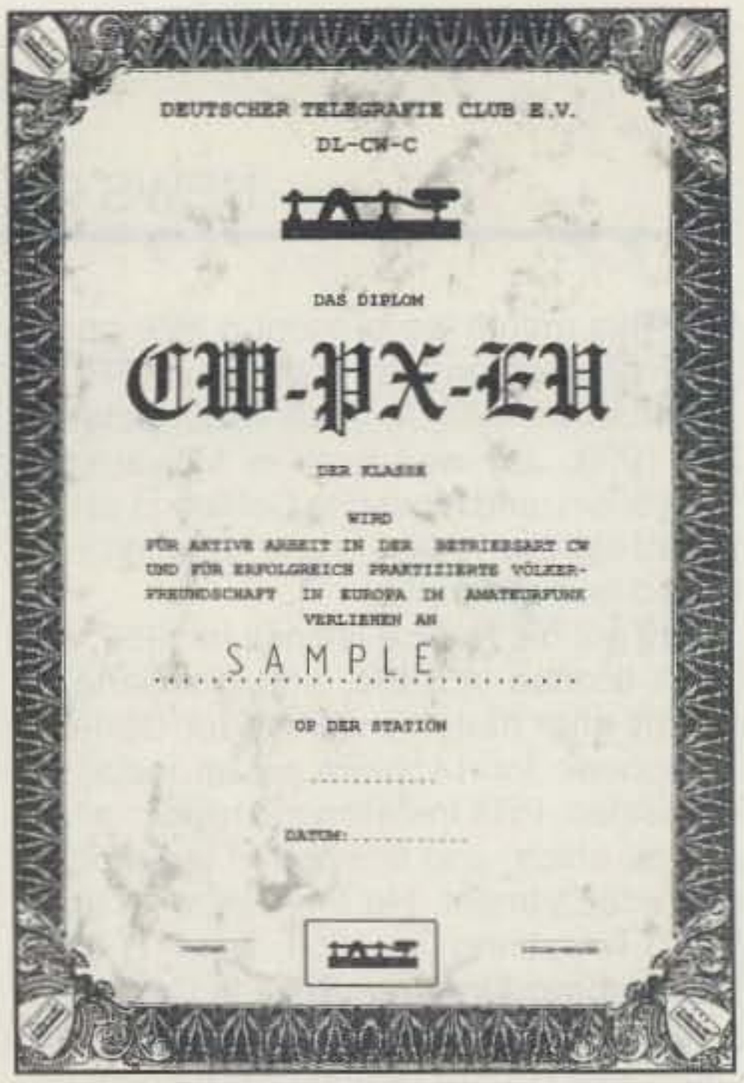
Deutscher Telegrafie Club Series

With their club official mott: "CW is one of the fundamentals of Amateur Radio," The German Deutscher Telegrafie Club signals its interests in a clear and uncomplicated way. The second of the group's awards is both easy and hard to earn. All you need is one CW contact a day for a year. That means *every* day of the year, factoring in vacations, business, or pleasure travel, or just being ill. In many northern areas, losing a few days of electricity due to ice storms is not unusual. Miss one day and you have to start all over again. I'd be interested to see if any of our readers takes up this challenge.

General Requirements: Contacts must be made on or after 1 Jan. 1998. SWLs may apply on the same basis as amateurs. As is true for many German awards, IRCs are not accepted due to the bad conversion rate of the German Post Office. Apply to: Raimund Misch, DG9YFB, Marderweg 8, D-48157 Muenster, Germany.

CW - PX - EU. Contact different European prefixes using CW only. Class 3 requires 60 prefixes, Class 2 requires 120, and Class 1 requires 180 different prefixes .If all are QRP (maximum 5 watts output), a special QRP sticker will be added to your award. Non-members apply with GCR.list; members of the club do not require GCR. Fee is DM15, or $US10.

CWYC (CW Year Certificate). Issued to promote the active use of CW for longer periods of time. You will need to provide



The CW – PX – EU Award offered by the Deutscher Telegrafie Club.

proof of making at least 365 CW QSOs within one calendar year. Each day of the year must have at least one CW QSO. Contest QSOs are okay. Special endorsement for QRP if power maximum is 5 watts output. Fee for this award is DM10, or $US7.

USA VHF/UHF County Award

Working US counties on VHF/UHF is the challenge presented by the last award presented this month. The requirements are fairly tough, especially since they require all contacts to have been made within the boundaries of one county.

Contact USA counties on VHF and UHF after 1 Jan. 1983.

Band	Initial Award (# of counties)	Endorsement each
50 MHz	100	50
144	100	50
222	50	10
432	50	10
903	25	5
1296	25	5
2.4 GHz up	5	5

The CQ USA-CA listing of counties is the official list and the USA-CA Record Book available from *CQ* must be used for the initial application on all bands below 900 MHz. The certification form within the book must be signed by two amateurs. Application for 903 MHz and above may be submitted as a list. For USA stations, all contacts must have been made from one county or any county adjoining it. QSL cards must show county or other information needed for positive determination of county. Mobiles operating on a county line may be credited for up to two counties at one time. Endorsements for All CW, SSB,

The CWYC CW Year Certificate issued by the Deutscher Telegrafie Club to promote active use of CW for longer periods.

EME, OSCAR, etc., are available. Repeaters may *not* be used. Fee is $US4 for SWOT members and overseas stations; all others $US5 for each certificate. Apply to: L.G. Parsons, W5AL, 11361 Tascosa Road Fm-1061, Amarillo, TX 79124.

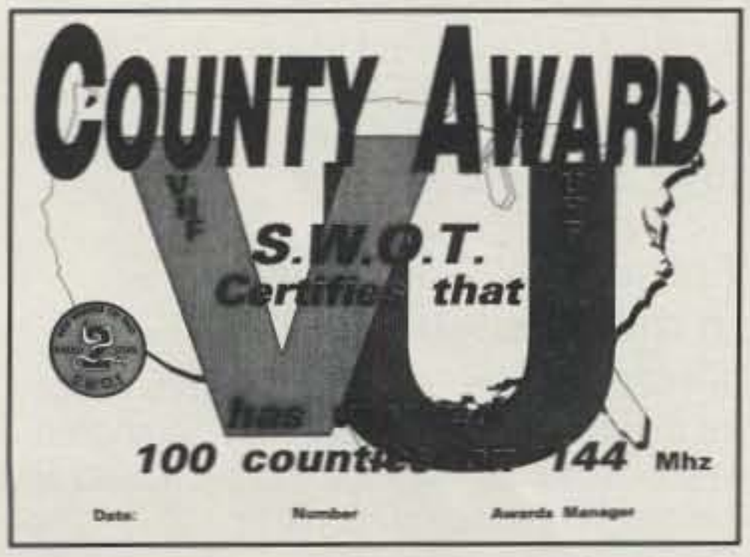
Internet URLs of The Month

WA3DPL shows you how to use your new inexpensive color printer to print individualized QSL cards. There are step-by-step instructions and interesting examples. This is a killer way to get the attention of that rare DX or last county you need: <http://www.qsl.net/wa3dpl/>.

The Israeli Amateur Radio Club has an excellent page that shows most of the 4X awards at: <http://hamradio.iarc.org/awards/awards.html>.

Please send me a sample of your club or group's awards and rules for review and inclusion in a future column.

73, Ted, K1BV



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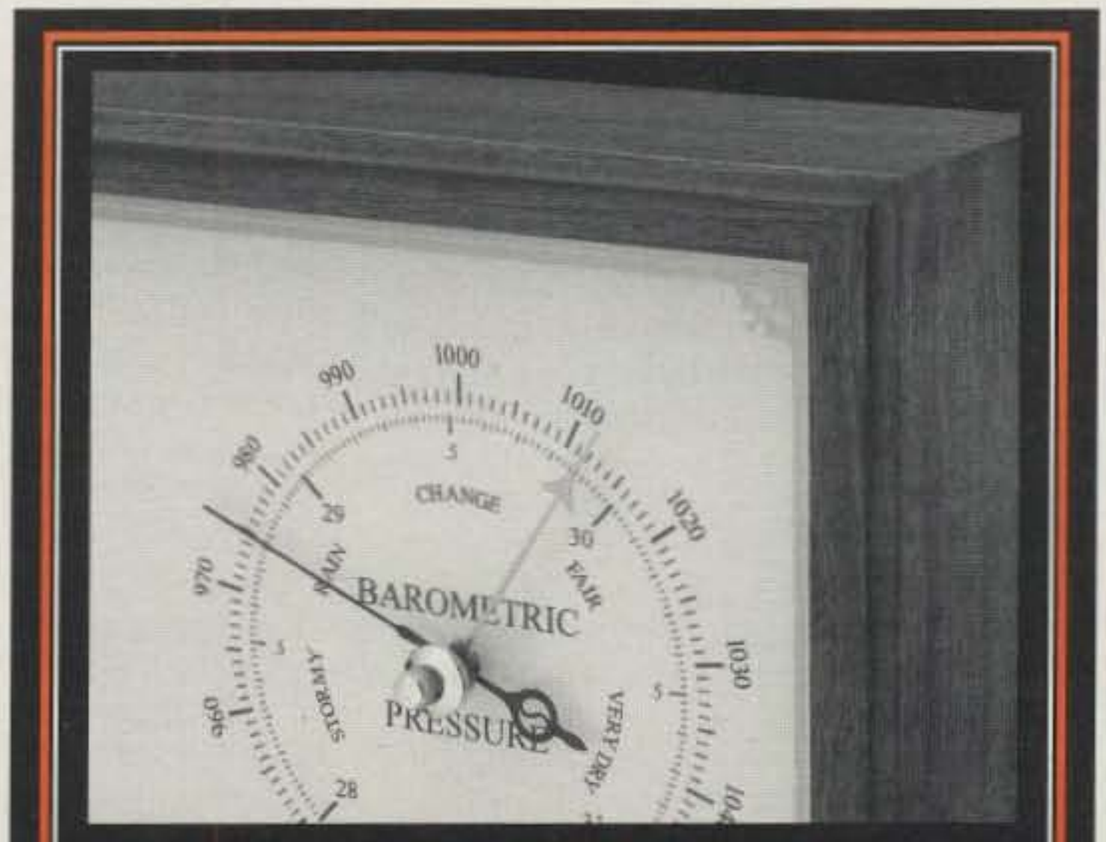

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CIRCLE 92 ON READER SERVICE CARD

BY FREDERICK O. MAIA, W5YI

WASHINGTON READOUT

REGULATORY NEWS IN THE WORLD OF AMATEUR RADIO

FCC Recognition of NFCC-Certified Coordinators Sought!

"The National Frequency Coordinator's Council (NFCC) is a District of Columbia non-profit corporation, the membership of which is composed of delegates from recognized frequency coordinators in the United States. The purpose of which the corporation is organized is to establish recognition of Amateur Radio frequency coordination by the Federal Communications Commission (FCC), the American Radio Relay League, Inc. (ARRL) and all Amateur Radio licensees."

—excerpted from draft petition

A repeater is receiver/transmitter "machine" that picks up a low-level signal and retransmits it at higher power using tall, high-gain antennas. Such an arrangement has the capacity to increase the EFP (effective radiated power) many, many times. Most amateur radio repeaters are found at the VHF and UHF level, especially at 2 meters (144–148 MHz) and 70 cm (433–450 MHz). They have been in existence since the early 1970s and are common for FM voice communications. The purpose of a repeater is to increase the range between the originating hand-held or mobile station and the receiving station.

The range of simplex VHF/UHF low-power transmitters is usually just a few miles, especially over hilly or mountainous terrain. A "simplex" transmission occurs when both the transmitter and receiver are operated on the same frequency. This distance can be predictably extended to 100 miles or more with a repeater. There are thousands of FM amateur radio repeaters, and when the range is up to 100 miles or more, they have the potential to interfere with one another.

Over the past couple of decades repeaters have become so popular that there are very few repeater "pairs" left to be allocated to a new repeater. We say "pairs" because repeaters are duplex machines—that is, they receive on one frequency and retransmit on another. The "split," the difference between the receive and transmit frequency, is pretty much standard: 600 kHz on 2 meters, and 5 MHz on 70 cm.

National Volunteer Examiner Coordinator, P.O. Box 565101, Dallas, TX 75356-5101 (telephone 817-461-6443 e-mail <fmaia@cwixmail.com>)

Repeater operations in the Amateur Service are governed by the Federal Communications Commission. However, there aren't many rules. Basically, any Technician or higher class operator may establish a repeater station. When two repeaters cause interference to one another, they are required by Sec. §97.205(c) of the Part 97 Amateur Service to resolve the interference between themselves " . . . unless the operation of one station is recommended by a frequency coordinator and the operation of the other station is not."

That is the only place in the FCC rules where Amateur Service frequency coordination is mentioned. A frequency coordinator is defined as a person or organization that is recognized in a local area by the amateur operators eligible to be a repeater station. The job of a frequency coordinator is to assign repeater frequencies in such a way as to avoid or minimize potential interference.

There is no FCC-recognized database of "recognized frequency coordinators." However, the American Radio Relay League believes that their Repeater Directory and band plans are the de facto standards. In recent years, the ARRL has been trying to get the FCC to recognize their listed coordinating groups and repeater channels. Three years ago a meeting was called by the ARRL to try to organize frequency coordination in the Amateur Service. As a result, an organization called the National Frequency Coordinators Council (NFCC) was formed. Their job would be to oversee the work of the local, regional, and state frequency coordination organizations. Now the NFCC wants to have the Federal Communications Commission recognize them in the rules as the official frequency coordination sanctioning body in ham radio.

NFCC Circulates Draft Proposal

The National Frequency Coordinators Council circulated a draft of a Petition for Rule Making to the nation's amateur service coordinators during early January. NFCC President Dick Isely, W9GIG, said the draft " . . . is the culmination of some three years of countless hours of work by many persons both within the NFCC and the ARRL leadership."

Isely summed up the purpose of the petition by declaring that "When all the legalese, complicated phrases, enumerated history, references, and appendices are stripped away, this is a request for concrete recognition of Amateur Radio Frequency Coordination and Coordinators." He added this was the goal that was stated in the St. Charles, Missouri coordinators meeting held in October 1995. The petition maintains that its purpose is " . . . to strengthen and enhance volunteer frequency coordination in the Amateur Service, thus to further increase and improve the self-regulatory character of the Service."

Even though frequency coordination is not part of the Commission's planned restructuring of the Amateur Service, the ARRL/NFCC draft document said it presents " . . . a window of political opportunity." Isely said he thought " . . . the atmosphere within the Commission is again favorable to our goal."

The draft petition was prepared by ARRL general counsel Chris Imlay, W3KD. We understand that League vice presidents Steve Mendelsohn, W2ML, and Hugh Turnbull, W3ABC, were the ARRL leadership that participated in the development of the draft petition. The conclusion that one would make is that the initiative did indeed have at least partial League support. The draft is 16 (single-spaced) pages long.

"Up until a couple of months ago, we assumed that the NFCC was going to be the sole petitioner on this issue of coordination and coordinator recognition within FCC Part 97," Isely commented in the draft's cover letter dated January 9th. "This draft reflects ARRL input," he said. "We believe the ARRL board will approve co-sponsorship of this petition at its next meeting the weekend of January 15–16. Our chances of FCC approval are improved several times over by having the ARRL as a joint petitioner."

Frequency Coordination In the Amateur Service

In 1972 (Docket 18803) rules were adopted to provide for the licensing of repeater stations. However, the FCC ceased licensing repeater stations in 1977. "The Commission largely held, in view of intervening deregulation between 1972 and 1977, that voluntary coordination had replaced Commission regulation as the

Say You Saw It In CQ

principal means of ensuring compatibility between and among repeater licensees," the draft reads.

Actually, the Commission did set aside all WR-by-3 callsigns for repeater stations but never implemented them. As a result, repeater stations have not been licensed since 1978, when the FCC adopted the new Group callsign system. All secondary callsigns were discontinued at the same time. Up until then, an amateur could apply for an additional callsign if he had another fixed transmitter location.

"The League has maintained for almost 20 years as its basic policy that amateur radio frequency/repeater coordination and database management in the VHF, UHF, and microwave frequencies is a local matter, best left to local and regional groups."

The draft document claims, "It has not been, and is not, the intention of the League to become involved in repeater coordination matters at the local level. Rather, the League's function has been to act as a facilitator, and to assist volunteer frequency coordinators in the Amateur Service in addressing issues which clearly and adversely impact amateur radio at the national level."

There have, however, been several instances of conflicts and competing claims as to who was the 'recognized' frequency coordinator in a given area. The ARRL is concerned because it publishes a Repeater Directory which is considered the prime resource listing of both coordinators and coordinated repeater stations. "These listings presuppose a means of identification of the coordinator. . . . Resolution of interference occurring between or among two or more repeaters requires the same determination."

In support of a new regulatory approach, the ARRL/NFCC draft document argues:

1. Frequency coordination is no longer an organizational luxury in terms of avoiding interference between repeaters, and among users of shared spectrum.

2. There is an inherent, basic philosophical conflict between the FCC's firm policy that no amateur has any claim to specific frequencies, and the operation of repeaters and other point to multipoint systems on dedicated channels (especially the concept of priorities between coordinated and non-coordinated repeaters on co- or adjacent channels).

3. There is an expectation that anyone who wants a repeater is entitled to establish one, despite low predicted loading of existing or proposed individual repeaters by individual users.

4. Crowded band conditions indicate that there is a limit to the number of repeaters (assuming traditional operating parameters and typical wide area coverage) that can be placed on the air without interference; and

5. There is not a sense of necessary participation in coordination among digital and other non–repeater users as there is among repeater users, and many coordinators confine their interests and coordination activities to voice repeater operations.

Since " . . . the identification of a coordinator is a person recognized by licensees who are eligible to be repeater licensees in a given area. . . identification is not practically workable, and it in fact has not worked. . . . Disputes over the identity of a frequency coordinator are not at all uncommon. . . . There is a need to establish standardized coordination practices . . . ," the document reads.

"It is time to revisit the issue of requiring coordination for amateur repeater and auxiliary stations, and the NFCC has a comprehensive plan to do so. . . . what is required is the acknowledgment of the NFCC as the Commission's single point of contact with the Commission for coordination purposes; the recognition of its established standards for identification

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and succession of coordinators; its standards for coordination practices; and its policies and procedures for informal dispute resolution in the private sector."

The ARRL/NFCC draft petition asked that the following rules be amended or adopted:

Section 97.3: Frequency coordinator. A certified entity which coordinates frequencies and associated technical and operating parameters for auxiliary and repeater facilities within a geographic area, in accordance with policies, procedures, and standards for frequency coordination recognized by the National Frequency Coordinator's Council.

National Frequency Coordinator's Council. A non-profit entity, the membership of which is composed of representatives of accredited amateur radio frequency coordination entities, which establishes and administers standards and procedures for frequency coordination and the certification of frequency coordinators.

Frequency Coordination. A set of technical operating parameters, including transmit and receive frequencies, issued by a frequency coordinator to operators of auxiliary or repeater facilities, in order to avoid or minimize potential interference to and from operation of other stations.

Section 97.101(e): All repeater and auxiliary facilities must be coordinated.

Section 97.201(c): Where the transmissions of an auxiliary station interfere with the operation of another auxiliary or repeater facility, the licensees are equally responsible for resolving the interference.

Section 97.205(c): Where the transmissions of a repeater station interfere with the operation of another repeater or auxiliary facility, the licensees are equally responsible for resolving the interference.

(New) **Subpart G – Frequency Coordination.**

Section 97.601: Frequency Coordinator Requirements and Qualifications.

(a) No organization or individual may serve as a coordinator unless certified by the National Frequency Coordinator's Council.

(b) A coordinator may be an individual, public, or private organization. All persons serving as coordinators, whether individually or as members of an organization, shall have their principal residence within the geographic area of service of the coordinator, be at least 18 years of age and hold a Technician or higher class license.

(c) No person may serve as a frequency coordinator if that person's amateur station license or amateur operator license has ever been revoked or suspended.

(d) There shall be only one frequency coordinator for each amateur service frequency subband within each geographical area. The same coordinator may provide coordination service for more than one frequency band in a geographical area.

Section 97.603: Frequency Coordinator duties.

(a) A frequency coordinator shall coordinate transmit/receive frequencies and associated technical and operating parameters for auxiliary and repeater facilities in accordance with standard procedures adopted by the National Frequency Coordinator's Council.

(b) A coordinator must make the following information available to all licensees of coordinated stations and to those requesting coordination of new or modified stations.

(1) A description of the geographical area and the frequency bands for which it performs coordination.

(2) The local or regional band plan(s) for each amateur frequency band within which it provides frequency coordination.

(3) A description of the process by which frequency coordination may be requested and obtained, and any information required from the amateur licensee. Such description shall include identification of all documents and/ or information which may be required.

(4) A description of the process by which coordination decisions may be reconsidered or reviewed, and the subsequent resolution procedures which will be followed.

(c) If, due to the number of repeater or auxiliary stations, or other fixed-frequency amateur stations in a particular subband in a particular geographical area, it is not possible to coordinate a new or modified repeater or auxiliary station on any frequency or frequency pair in the band of choice without predicted harmful interference, the coordinator shall recommend an alternative frequency band for use by that amateur licensee.

According to a January 18th ARRL News Bulletin: Meeting in Houston, Texas, January 15 and 16: "The Board reviewed a draft petition for rule making for possible joint submission with the National Frequency Coordinators' Council (NFCC) to seek rules requiring that all repeater and auxiliary facilities must be frequency coordinated. A majority of the Board did not find that there was compelling evidence warranting a move beyond the existing rules at this time, but the NFCC was invited to revisit the matter."

The following letters were exchanged between the ARRL Board and the NFCC:

January 17, 1999
George R. Isely, W9GIG

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President, NFCC
Dear Dick,

Thank you for consulting the ARRL Board, on behalf of the NFCC, with regard to a draft petition for FCC rule making proposing that the coordination of repeater and auxiliary operation be made mandatory. Such consultation is very much in the spirit of the memorandum of understanding between our two organizations. The Board devoted a portion of its Annual Meeting in Houston, January 15–16, to a discussion of the draft petition.

Board members were especially interested in the question of why mandatory coordination would be in the best interests of Amateur Radio at this time. I must report to you that a majority of the Board did not find compelling evidence, in the material submitted to them for consideration, that a move beyond the existing rules is warranted at this time. The existing rules provide reasonable priority for coordinated repeaters, and some Board members cited cases in which FCC personnel have used those rules to resolve interference problems between repeaters. With the Commission's renewed commitment to enforcement of the amateur rules, there is reason to believe that future cases of harmful interference from uncoordinated repeaters can be effectively addressed in the same way.

I should emphasize that the Board has not adopted a philosophical position opposing mandatory coordination. Board members simply have concluded that a compelling argument in support of mandatory coordination has not been offered. If the NFCC wishes to make the case for mandatory coordination, and as long as the interests of all licensees are taken into account, I believe you will find the Board to be quite willing to listen. 73,

Sincerely,
Rod Stafford, W6ROD
President, ARRL

January 18, 1999
Rodney J. Stafford, W6ROD
President, ARRL

Dear Rod,

I am quite disappointed to learn that the ARRL Board of Directors decided to not support the Proposal for Rule Making that was drafted in Chris Imlay's office on December 12th. But I think I can understand why this happened.

After over three years of work and delay on this project, there is some irony in the fact that we were, at the end, hasty in getting our proposal to the ARRL board. But in all fairness, I have to say that when we saw Chris's first "straw man" draft constructed to include the ARRL as a joint petitioner, the impression was given that the ARRL board looked favorably on this project. And in this atmosphere, we obviously did not do all of our homework with the individual directors.

On behalf of the NFCC, I thank you and the board for the support that has been given to our organization. I also want to thank Chris Imlay for the time he has spent on our behalf—not only on the PRM, but also for the hours he spent on our founding paperwork and documents.

I think it's fair to say this PRM is not a dead issue for the NFCC. As soon as emotions have settled a bit, we will press on. I am not now in a position to state what direction the NFCC will take on this issue. I personally think we will have our best chance of success with the FCC, if this PRM is filed as a joint petition. But this decision is up to the NFCB—and depending on the changes that might be made to the PRM draft, another vote of our members.

73,
George R. Isely, W9GIG
President, NFCC

Thus, at least for the time being it looks as if the ARRL Board will not be going along with the recommendation that the FCC recognize the National Frequency Coordinators Council as the overall authority in Amateur Service frequency coordination. Perhaps the reason is that the League does not want to be tied down to FM technology which is fast becoming obsolete. The future of amateur radio is new digital technologies.

It is noteworthy that the ARRL Board voted at their January 1999 Board meeting to establish an "Amateur Radio Technology Task Force." The Amateur Radio Technology Task Force will be responsible for, among other related things, developing a strategy and plan of work exploring new technologies, assessing their applicability to amateur radio, and also developing a plan as to how to incorporate such new technology in the amateur radio service. The Technology Task Force will be appointed by the ARRL President and consist of such members of the ARRL Board of Directors or Officers, ARRL HQ staff, and League members who have been actively involved in experimenting with or developing new technologies that may have some applicability to the Amateur Radio Service.

The Technology Task Force may, from time to time, bring proposals to the Board of Directors to further the development and implementation of such new technologies in amateur radio. The Technology Task Force may meet with other amateur radio organizations that are involved in experimental work or developing new technologies for the purpose of exploring joint sponsorship of research and/or development. The task force shall report to the Board at the 2000 Annual Meeting regarding the progress of its work.

The Future Systems Committee was reconstituted as the Amateur Radio Technology Working Group. The Technology Working Group shall conduct such experiments, research, and development regarding newer technologies as requested by the Technology Task Force. The Technology Working Group shall consist of such persons appointed by the President and who are knowledgeable about newer technologies or experimenting with or developing such technologies as may be incorporated into the Amateur Radio Service.

73, Fred, W5YI

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BY GEORGE JACOBS, W3ASK

PROPAGATION

THE SCIENCE OF PREDICTING RADIO CONDITIONS

Sunspot Cycle 23 Progress

According to the latest data from the Royal Observatory of Belgium, December 1998 was a "wild" month for sunspot activity.

On the first day of Decembe, sunspot activity soared to 127, the highest daily count reported so far in Cycle 23. On the 22nd, a daily low of 33 was recorded. It is somewhat unusual to experience such wide swings in daily counts at the present stage of Cycle 23. The mean value for the month was 82, which results in a 12-month running smoothed sunspot number of 62 centered on June 1998. This is a rise in the cycle of 3 from the previous month. Sunspot Cycle 23 continues to rise slowly but steadily, with a smoothed number of 115 forecast for April 1999.

The Dominion Radio Astrophysical Observatory of Canada, located at Penticton, BC, reports a corresponding increase in the adjusted mean level of 10.7 cm solar flux to 145 for December 1998. This results in a smoothed value of 118 centered on June 1998. A smoothed level of 141 is forecast for April 1999.

LAST-MINUTE FORECAST

Day-to-Day Conditions Expected for April 1999

	Expected Signal Quality			
Propagation Index.....	**(4)**	**(3)**	**(2)**	**(1)**
Above Normal: 1-2, 10, 28	**A**	**A**	**B**	**C**
High Normal: 8-9, 13, 17, 20-22, 25, 29	**A**	**B**	**C**	**C-D**
Low Normal: 3, 6-7, 11-12, 15-16, 18-19, 23-24, 27	**B**	**C-B**	**C-D**	**D-E**
Below Normal: 5, 14, 26, 30	**C**	**C-D**	**D-E**	**E**
Disturbed: 4	**C-D**	**D**	**E**	**E**

Where expected signal quality is:

A—Excellent opening, exceptionally strong, steady signals greater than S9.

B—Good opening, moderately strong signals varying between S6 and S9+, with little fading and noise.

C—Fair opening, signals between moderately strong and weak, varying between S3 and S9, with some fading and noise.

D—Poor opening, with weak signals varying between S1 and S6, with considerable fading and noise.

E—No opening expected.

HOW TO USE THIS FORECAST

1. Find the *propagation index* associated with the particular path opening from the Propagation Charts appearing on the following pages.

2. With the *propagation index*, use the above table to find the expected signal quality associated with the path opening for any given day of the month. For example, an opening shown in the Propagation Charts with a *propagation index* of (3) will be excellent (A) on April 1st and 2nd, fair-to-good (C-B) on the 3rd, poor (D) on the 4th, fair-to-poor (C-D) on the 5th, etc.

Sunspot Cycle 23 Review

In an effort to bring space weather (which includes the ionosphere) researchers and users together, two back-to-back conferences will take place this month between April 19 and 23 in the Boulder, Colorado facility of the Department of Commerce.

The first of these conferences, to be hosted by the Space Environmental Center (SEC), is scheduled for April 19–21. It's stated purpose is to bring researches, providers, and users together to maximize the transfer of research results into efficient operational usage. Among its many services, SEC provides data and forecasts concerning HF propagation conditions, geomagnetism, and solar radiation.

The second conference, co-hosted by the Air Force Research Laboratory and the National Science Foundation's Division of Atmospheric Science, will be held April 21–23. This meeting will emphasize latest research efforts in space, including the ionosphere.

It is expected that both meetings will review the progress of sunspot Cycle 23 to date and fine-tune predictions as to the level of and date expected for peak intensity, and the expected remaining life for the cycle.

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It is hoped that the proximity of the two meetings, one emphasizing user and operational concerns and the other emphasizing research findings, will foster improved communication among researchers, the providers, and the users of space weather (including ionospheric) information services.

Check the SEC website at <http://www.sec.noaa.gov> for additional information concerning these conferences, including required registration fees. Check the website menu for a listing of the various informational services provided by SEC.

April Conditions

With the sunspot cycle at its high stage, the 10 and 12 meter bands should remain very much alive during April and the spring months. Expect good DX openings to most areas of the world during the hours of daylight. While normal seasonal changes in propagation will result in fewer east-west openings, conditions towards southern and tropical areas are expected to hold up very well. Look for peak signal levels to most areas of the world during the late afternoon hours.

Expect 15 and 17 meters to be the best bands for DX during most of the daylight hours in April and the spring months. Both bands should be loaded with DX signals from just after sunrise to well beyond sunset. Signals should be strongest to most areas of the world during the afternoon hours, but look for good, solid openings towards southern and tropical areas well into the evening hours.

Twenty meters is expected to be a near 24-hour DX band during April and the spring months. Strongest signals, with DX openings to just about every area of the world, should occur during a two hour window after local sunrise and again during the late afternoon and through the evening hours to as late as midnight.

Shorter hours of darkness and increasing static levels in the northern hemisphere will result in somewhat poorer DX conditions on the 30, 40, 80, and 160 meter bands during April and the spring months. Nevertheless, strong, stable signals should be possible to many areas of the world on 30 and 40 meters during the hours of darkness. Signals should peak from an easterly direction about an hour or two before midnight, and from most other directions about an hour or so before local sunrise at the USA end of the path. Some fairly good DX should also be possible on 80 meters during the hours of darkness. Propagation patterns on 80 meters should be similar to those observed on 40 meters, but openings will be weaker and noisier. There is a chance for some DX openings on 160 meters during the hours of darkness, but expect to encounter increasingly high static levels.

The favorable equinoctial propagation conditions discussed in last month's column should continue through most of April. Check both long- and short-path openings during the sunrise and sunset periods on all bands between 10 and 80 meters for paths between the northern and southern hemispheres.

For short-skip openings up to approximately 250 miles, use 80 meters during the day and 160 meters at night. For distances between 250 and 750 miles, 30 and 40 meters should be best during the day, 40 and 80 meters from sundown to midnight, and 80 meters from midnight to sunrise. For openings between distances

Say You Saw It In CQ

of 750 and 1300 miles, try 20 meters during the day, with 30, 40, and 80 meters best during the hours of darkness. Between 1300 and 2300 miles check 15, 17, and 20 meters during the day; 20, 30, and 40 meters from sundown to midnight; and 40 meters from midnight to sunrise. Short-skip openings beyond 1300 miles should also be possible on 10 and 12 meters during most of the afternoon hours.

The DX Propagation Charts in this month's column contain DX propagation predictions for each amateur band between 6 and 160 meters for the period April 15 to June 15, 1999. Beginning this month and continuing through the summer and fall months, the times shown in the charts will be local *daylight* time (EDT, CDT, MDT, and PDT). For detailed predictions of short-skip openings between distances of 50 and 2300 miles, see the Short-Skip Propagation Charts, which appeared in last month's column.

VHF Ionospheric Opening

April should be a good month for VHF ionospheric openings. Some F2-layer DX openings should be possible on 6 meters from the USA to southern and tropical areas. These are most likely to occur during the afternoon hours when conditions are High Normal or better. The best times for such openings are those shown for 10 meters in the DX charts with a propagation index of (4).

Trans-equatorial (TE) propagation between the USA and South America should reach a seasonal peak during April. These openings are most likely to occur on 6 meters, with some also possible on 2 meters, between 8 and 11 PM local time. TE openings favor the southern tier states, but some openings may also be possible to more northerly locations.

Lyrids, a major meteor shower, should take place between April 22nd and 23rd, with a peak expected on the 22nd. During the shower's peak, at least 15 large meteors should enter the Earth's atmosphere hourly, permitting fairly good meteor-scatter communications on the VHF bands.

A seasonal increase in sporadic-*E* ionization, with associated short-skip openings on both 6 and 2 meters, usually begins during April and continues through the spring and summer months. While, as its name implies, sporadic-E ionization can occur at just about any time, there is a tendency for it to peak between 8 AM and noon and again between 5 and 9 PM local time. Occasional short-skip openings on 6 meters, ranging between 750 and 1300 miles, are possible during April.

Unusual ionospheric openings on the VHF bands can also occur during April when widespread auroral activity is present. The best times to check for such openings are during expected periods of radio storminess, since during April many storms will be associated with auroral activity. See the Last-Minute Forecast at the beginning of this column for those days during April that are expected to be Below Normal or Distributed.

73, George, W3ASK

April 15 to June 15, 1999
Time Zone: EDT (24-Hour Time)
EASTERN USA TO:

	10 Meters	*15 Meters*	*20 Meters*	*40/80 Meters*
Western & Central Europe & North Africa	10-13 (1) 13-16 (2) 16-18 (1)	07-09 (1) 09-11 (2) 11-15 (3) 15-17 (4) 17-18 (3) 18-19 (2) 19-21 (1)	09-13 (1) 13-15 (2) 15-17 (3) 17-21 (4) 21-01 (3) 01-04 (2) 04-07 (3) 07-09 (2)	19-20 (1) 20-21 (2) 21-00 (3) 00-02 (2) 02-03 (1) 20-21 (1)* 21-22 (2)* 22-00 (3)* 00-01 (2)* 01-02 (1)*
Northern Europe & CIS**	11-16 (1)	08-10 (1) 10-13 (2) 13-16 (3) 16-18 (2) 18-19 (1) 22-00 (1)	06-09 (2) 09-13 (1) 13-16 (2) 16-20 (3) 20-22 (4) 22-02 (3) 02-03 (2) 03-06 (1)*	19-20 (1) 20-23 (2) 23-01 (1) 20-23 (1)*
Eastern Mediterranean & Middle East	14-17 (1)	10-14 (1) 14-16 (2) 16-18 (3) 18-19 (2) 19-20 (1)	12-16 (1) 16-18 (2) 18-21 (3) 21-00 (4) 00-02 (3) 02-03 (2) 03-06 (1) 06-08 (2) 08-09 (1)	20-22 (1) 22-00 (2) 00-01 (1) 21-23 (1)*
Western Africa	10-11 (1) 11-12 (2) 12-14 (3) 14-16 (4) 16-18 (3) 18-20 (2) 20-21 (1)	07-08 (2) 08-10 (3) 10-13 (2) 13-16 (3) 16-20 (4) 20-23 (3) 23-04 (2) 04-07 (1)	07-14 (1) 14-16 (2) 16-18 (3) 18-02 (4) 02-05 (3) 05-07 (2)	20-22 (1) 22-02 (2) 02-03 (1) 22-02 (1)*
Eastern & Central Africa	16-17 (1) 17-19 (2) 19-21 (1)	08-12 (1) 12-14 (2) 14-16 (3) 16-19 (4) 19-20 (3) 20-21 (2) 21-22 (1)	14-16 (1) 16-18 (2) 18-19 (3) 19-22 (4) 22-01 (3) 01-04 (2) 04-06 (1) 06-08 (2) 08-09 (1)	21-01 (1) 22-00 (1)*
Southern Africa	10-11 (1) 11-13 (2) 13-14 (1)	08-10 (1) 10-12 (2) 12-14 (3) 14-15 (2) 15-16 (1) 01-03 (1)	12-14 (1) 14-16 (2) 16-17 (3) 17-18 (2) 18-19 (1) 00-01 (1) 01-02 (2) 02-04 (3) 04-05 (2) 05-06 (1) 06-08 (2) 08-09 (1)	21-22 (1) 22-00 (2) 00-02 (1) 22-01 (1)*
Central & South Asia	19-21 (1)	09-12 (1) 15-18 (1) 18-20 (2) 20-22 (1)	16-18 (1) 18-19 (2) 19-21 (3) 21-22 (2) 22-00 (1) 05-06 (1) 06-08 (2) 08-09 (1)	05-07 (1) 19-21 (1)
Southeast Asia	18-21 (1)	08-11 (1) 18-20 (1) 20-22 (2) 22-23 (1)	06-07 (1) 07-09 (2) 09-10 (1) 16-17 (1) 17-18 (2) 18-19 (3) 19-20 (2) 20-21 (1)	05-07 (1)
Far East	18-20 (1)	08-10 (1) 15-16 (1) 16-18 (2) 18-20 (3)	06-07 (1) 07-09 (2) 09-10 (1) 16-17 (1)	06-08 (1)

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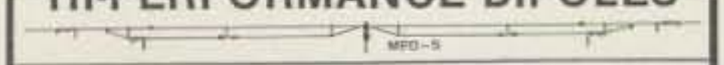
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HOW TO USE THE DX PROPAGATION CHARTS

1. Use chart appropriate to your transmitter location. The Eastern USA Chart can be used in the 1, 2, 3, 4, 8, KP4, KG4, and KV4 areas in the USA and adjacent call areas in Canada; the Central USA Chart in the 5, 9, and 0 areas; the Western USA Chart in the 6 and 7 areas; and with somewhat less accuracy in the KH6 and KL7 areas.

2. The predicted times of openings are found under the appropriate meter band column (10 through 80 meters) for a particular DX region, as shown in the left-hand column of the charts. An * indicates the best time to listen for 160 meter openings.

3. The propagation index is the number that appears in ( ) after the time of each predicted opening. The index indicates the number of days during the month on which the opening is expected to take place as follows:

(4) Opening should occur on more than 22 days
(3) Opening should occur between 14 and 22 days
(2) Opening should occur between 7 and 13 days
(1) Opening should occur on less than 7 days

Refer to the "Last Minute Forecast" at the beginning of this column for the actual dates on which an opening with a specific propagation index is likely to occur, and the signal quality that can be expected.

4. Times shown in the charts are in the 24-hour system, where 00 is midnight; 12 is noon; 01 is 1 A.M.; 13 is 1 P.M., etc. Appropriate *daylight* time is used, not GMT. To convert to GMT, add to the times shown in the appropriate chart 7 hours in PDT Zone, 6 hours in MDT Zone, 5 hours in CDT Zone, and 4 hours in EDT Zone. For example, 14 hours in Washington, D.C. is 18 GMT. When it is 20 hours in Los Angeles, it is 03 GMT, etc.

5. The charts are based upon a transmitted power of 250 watts CW, or 1 kw, PEP on sideband, into a dipole antenna a quarter-wavelength above ground on 160 and 80 meters, and a half-wavelength above ground on 40 and 20 meters, and a wavelength above ground on 15 and 10 meters. For each 10 dB gain above these reference levels, the *propagation index* will increase by one level; for each 10 dB loss, it will lower by one level.

6. Propagation data contained in the charts has been prepared from basic data published by the Institute for Telecommunication Sciences of the U.S. Dept of Commerce, Boulder, Colorado 80302.

Time Zones: CDT & MDT (24-Hour Time) CENTRAL USA TO:

	10 Meters	*15 Meters*	*20 Meters*	*40/80 Meters*
Western & Southern Europe & North Africa	11-17 (1)	07-12 (1) 12-14 (2) 14-18 (3) 18-19 (2) 19-20 (1)	05-09 (2) 09-14 (1) 14-17 (2) 17-19 (3) 19-21 (4) 21-23 (3) 23-01 (2) 01-05 (1)	19-21 (1) 21-23 (2) 23-01 (1) 00-01 (1)*
Northern Europe & CIS**	NIL	10-12 (1) 12-16 (2) 16-18 (1) 21-23 (1)	01-07 (1) 07-09 (2) 09-14 (1) 14-19 (2) 19-23 (3) 23-01 (2)	19-21 (1) 21-23 (2) 23-01 (1)
Eastern Mediter-ranean & Middle East	15-18 (1)	10-13 (1) 13-17 (2) 17-18 (1) 20-22 (1)	13-15 (1) 15-17 (2) 17-20 (3) 20-22 (4) 22-00 (3) 00-01 (2) 01-03 (1)	20-00 (1)
Western Africa	10-12 (1) 12-14 (2) 14-17 (3) 17-18 (2) 18-19 (1)	09-13 (1) 13-15 (2) 15-17 (3) 17-19 (4) 19-21 (3) 21-22 (2) 22-23 (1)	12-15 (1) 15-17 (2) 17-19 (3) 19-23 (4) 23-00 (3) 00-01 (2) 01-03 (1)	20-21 (1) 21-23 (2) 23-00 (1) 21-23 (1)*
Eastern & Central Africa	17-19 (1)	12-14 (1) 14-15 (2) 15-17 (3) 17-19 (4) 19-20 (3) 20-21 (2) 21-22 (1)	13-15 (1) 15-17 (2) 17-19 (3) 19-21 (4) 21-23 (3) 23-01 (2) 01-03 (1) 07-09 (1)	20-23 (1)
Southern Africa	10-12 (1)	09-11 (1) 11-13 (2) 13-14 (3) 14-15 (2) 15-16 (1) 00-02 (1)	14-16 (1) 16-19 (2) 19-22 (1) 22-00 (2) 00-02 (3) 02-04 (2) 04-05 (1) 05-07 (2) 07-08 (1)	20-22 (1) 22-00 (2) 00-01 (1) 22-00 (1)*
Central & South Asia	18-21(1)	16-18 (1) 18-21 (2) 21-22 (1)	05-07 (1) 07-09 (2) 09-11 (1) 18-19 (2) 19-21 (3) 21-23 (2) 23-00 (1)	06-08 (1) 19-21 (1)
South-east Asia	18-20 (1)	09-11 (1) 11-13 (1) 13-15 (1) 17-19 (1) 19-21 (2) 21-23 (1)	23-03 (1) 03-07 (2) 07-09 (3) 09-11 (2) 11-12 (1)	05-07 (1)
Far East	18-21 (1)	08-11 (1) 15-16 (1) 16-17 (2) 17-21 (3) 21-23 (2) 23-00 (1)	23-02 (1) 02-04 (2) 04-06 (3) 06-08 (4) 08-09 (3) 09-11 (2) 11-13 (1)	03-05 (1) 05-06 (2) 06-07 (1) 05-06 (1)*
South Pacific & New Zealand	11-14 (1) 14-16 (2) 16-20 (3) 20-21 (2) 21-22 (1)	08-09 (1) 09-11 (2) 11-14 (1) 14-17 (2) 17-18 (3) 18-21 (4) 21-23 (3) 23-01 (2) 01-03 (1)	16-19 (1) 19-20 (2) 20-21 (3) 21-03 (4) 03-07 (3) 07-09 (4) 09-10 (3) 10-11 (2) 11-12 (1)	00-02 (1) 02-04 (2) 04-06 (3) 06-07 (2) 07-08 (1) 02-04 (1)* 04-05 (2)* 05-06 (1)*
Austral-asia	15-17 (1) 17-19 (2) 19-21 (3) 21-22 (1)	08-09 (1) 09-10 (2) 10-11 (1) 16-18 (1) 18-20 (2) 20-22 (3) 22-23 (2) 23-00 (1)	05-07 (3) 07-08 (2) 08-10 (3) 10-12 (2) 12-16 (1) 16-18 (2) 18-21 (1) 21-23 (2) 23-01 (3) 01-05 (4)	02-04 (1) 04-06 (2) 06-07 (1) 04-06 (1)*
South Pacific & New Zealand	15-17 (1) 17-18 (2) 18-20 (3) 20-21 (2) 21-22 (1)	09-11 (1) 13-15 (1) 15-17 (2) 17-18 (3) 18-21 (4) 21-23 (3) 23-00 (2) 00-01 (1)	19-21 (1) 21-22 (2) 22-23 (3) 23-04 (4) 04-08 (3) 08-09 (2) 09-10 (1) 20-21 (1) 21-22 (1)	00-02 (1) 02-05 (2) 05-06 (3) 06-07 (2) 07-08 (1) 02-07 (1)*
Austral-asia	17-19 (1) 19-21 (2) 21-22 (1)	09-10 (1) 10-11 (2) 11-12 (1) 17-19 (1) 19-20 (2) 20-22 (3) 22-23 (2) 23-00 (1)	23-00 (1) 00-03 (2) 03-05 (3) 05-08 (4) 08-09 (3) 09-10 (2) 10-11 (1) 17-19 (1)	03-05 (1) 05-07 (2) 07-08 (1) 05-07 (1)*
Carib-bean, Central America & Northern Countries of South America	11-12 (1) 12-14 (2) 14-16 (3) 16-18 (4) 18-19 (3) 19-20 (2) 20-21 (1)	07-08 (1) 08-09 (2) 09-14 (3) 14-20 (4) 20-22 (3) 22-23 (2) 23-00 (1)	02-06 (2) 06-07 (3) 07-10 (4) 10-12 (3) 12-15 (2) 15-17 (3) 17-23 (4) 23-02 (3)	19-20 (1) 20-21 (2) 21-05 (3) 05-07 (2) 07-08 (1) 21-02 (1)* 02-05 (2)* 05-06 (1)*
Peru, Bolivia, Paraguay, Brazil, Chile, Argentina & Uruguay	08-10 (1) 10-14 (2) 14-17 (3) 17-19 (4) 19-20 (2) 20-21 (1)	07-08 (1) 08-11 (2) 11-14 (1) 14-15 (2) 15-16 (3) 16-20 (4) 20-22 (3) 22-23 (2) 23-00 (1)	05-06 (1) 06-09 (2) 09-15 (1) 15-17 (2) 17-19 (3) 19-00 (4) 00-02 (3) 02-05 (2)	20-21 (1) 21-04 (2) 04-06 (1) 23-03 (1)* 03-04 (2)* 04-06 (1)*
McMurdo Sound, Antarctica	17-19(1)	16-18 (1) 18-20 (2) 20-21 (1) 02-07 (2) 07-08 (1)	16-18 (1) 18-20 (2) 20-02 (3)	20-01 (1) 01-05 (2) 05-06 (1)

Caribbean, Central America & Northern Countries of South America	09-12 (1) 12-14 (2) 14-15 (3) 15-17 (4) 17-18 (3) 18-19 (2) 19-20 (1)	07-09 (1) 09-11 (2) 11-14 (3) 14-19 (4) 19-21 (3) 21-22 (2) 22-23 (1)	03-06 (2) 06-08 (3) 08-10 (4) 10-12 (3) 12-15 (2) 15-17 (3) 17-23 (4) 23-03 (3)	19-21 (1) 21-22 (2) 22-03 (3) 03-05 (2) 05-07 (1) 21-23 (1)* 23-04 (2)* 04-06 (1)*
Peru, Bolivia, Paraguay, Brazil, Chile, Argentina & Uruguay	08-10 (1) 10-14 (2) 14-16 (3) 16-18 (4) 18-19 (3) 19-20 (2) 20-21 (1)	07-08 (1) 08-11 (2) 11-14 (1) 14-15 (2) 15-16 (3) 16-19 (4) 19-21 (3) 21-23 (2) 23-00 (1)	05-06 (1) 06-09 (2) 10-15 (1) 15-17 (2) 17-19 (3) 19-00 (4) 00-02 (3) 02-05 (2)	21-22 (1) 22-00 (2) 00-02 (1) 02-05 (2) 05-07 (1) 01-05 (1)*
McMurdo Sound, Antarctica	18-20 (1)	15-17 (1) 17-19 (2) 19-21 (3) 21-23 2) 23-00 (1)	16-18 (1) 18-19 (2) 19-02 (3) 02-04 (2) 04-06 (1)	20-22 (1) 22-00 (2) 00-02 (1) 02-04 (2) 04-06 (1)

April 15 to June 15, 1999
WESTERN USA TO:

	10 Meters	*15 Meters*	*20 Meters*	*40/80 Meters*
Western & Southern Europe & North Africa	09-12 (1) 16-17 (1)	08-11 (1) 11-14 (2) 14-16 (3) 16-17 (2) 17-18 (1)	01-07 (1) 07-10 (2) 10-13 (1) 13-17 (2) 17-19 (3) 19-21 (2) 21-23 (3) 23-01 (2)	20-21 (1) 21-23 (2) 23-00 (1) 21-23 (1)*
Central & Northern Europe & CIS**	14-16 (1)	11-14 (1) 14-16 (2) 16-17 (1) 22-00 (1)	02-07 (1) 07-09 (2) 09-13 (1) 13-16 (2) 16-18 (3) 18-22 (2) 22-00 (3) 00-02 (2)	19-23 (1) 21-22 (1)*
Eastern Mediterranean & Middle East	Nil	09-11 (1) 11-15 (2) 15-19 (1) 19-21 (2) 21-22 (1)	07-08 (1) 08-10 (2) 10-13 (1) 13-15 (2) 15-17 (3) 17-20 (2) 20-22 (3) 22-23 (2) 23-03 (1)	20-23 (1)
Western Africa	10-14 (1) 14-17 (2) 17-19 (1)	08-12 (1) 12-15 (2) 15-17 (3) 17-19 (4) 19-20 (3) 20-21 (2) 21-22 (1)	02-06 (1) 06-08 (2) 08-15 (1) 15-17 (2) 17-18 (3) 18-22 (4) 22-00 (3) 00-02 (2)	20-23 (1)
Eastern & Central Africa	15-18 (1)	10-12 (1) 12-14 (2) 14-17 (3) 17-19 (2) 19-21 (1) 21-23 (2) 23-00 (1)	11-15 (1) 15-17 (2) 17-19 (3) 19-21 (2) 21-23 (3) 23-00 (2) 00-02 (1)	19-22 (1)
Southern Africa	09-11 (1)	07-09 (1) 09-11 (2) 11-12 (1) 12-14 (2) 14-15 (1)	07-09 (1) 13-15 (1) 15-18 (2) 18-22 (1) 22-23 (2) 02-03 (3) 01-02 (2) 02-03 (1)	19-20 (1) 20-22 (2) 22-23 (1) 20-22 (1)*
Central & South Asia	17-19 (1)	08-09 (1) 09-11 (2) 11-16 (1) 16-17 (2) 17-19 (3) 19-21 (2) 21-23 (1)	05-06 (1) 06-07 (2) 07-09 (3) 09-10 (2) 10-11 (1) 16-18 (1) 18-21 (2) 21-23 (1)	05-08 (1)
Southeast Asia	12-14 (1)	08-09 (1) 09-12 (2) 12-19 (1) 19-22 (2) 22-23 (1)	04-07 (2) 07-10 (3) 10-11 (2) 11-13 (1) 22-00 (1) 00-02 (2) 02-04 (3)	04-07 (1) 05-06 (1)*
Far East	12-13 (1) 13-15 (2)	08-10 (1) 10-17 (2)	04-07 (2) 07-08 (3)	01-03 (1) 03-07 (2)
	15-19 (1)	17-21 (3) 21-23 (2) 23-00 (1)	08-09 (4) 09-10 (3) 10-11 (2) 11-12 (1) 12-14 (2) 14-21 (1) 21-23 (2) 23-00 (3) 00-03 (4) 03-04 (3)	07-08 (1) 03-06 (1)*
South Pacific & New Zealand	11-13 (1) 13-15 (2) 15-17 (3) 17-19 (4) 19-20 (3) 20-22 (2) 22-23 (1)	09-10 (1) 10-12 (3) 12-16 (2) 16-17 (3) 17-21 (4) 21-00 (3) 00-02 (2) 02-03 (1)	06-08 (2) 08-11 (3) 11-12 (2) 12-17 (1) 17-19 (2) 19-21 (3) 21-02 (4) 02-06 (3)	22-00 (1) 00-02 (2) 02-07 (3) 07-08 (2) 08-09 (1) 01-02 (1)* 02-06 (2)* 06-07 (1)*
Australasia	13-14 (1) 14-15 (2) 15-19 (3) 19-20 (2) 20-21 (1)	13-16 (1) 16-18 (2) 18-19 (3) 19-22 (4) 22-00 (3) 00-02 (2) 02-03 (1)	05-07 (2) 07-09 (3) 09-10 (2) 10-12 (1) 18-20 (1) 20-21 (2) 21-23 (3) 23-03 (4) 03-05 (3)	01-02 (1) 02-04 (2) 04-06 (3) 06-07 (2) 07-08 (1) 02-03 (1)* 03-05 (2)* 05-06 (1)*
Caribbean, Central	10-12 (1) 12-14 (2) 14-15 (3)	07-08 (1) 08-09 (2) 09-13 (3)	00-03 (3) 03-05 (2) 05-06 (3)	19-20 (1) 20-21 (2) 21-00 (3)
America & Northern Countries of South America	15-18 (4) 18-20 (2) 20-21 (1)	13-19 (4) 19-20 (3) 20-22 (2) 22-23 (1)	06-09 (4) 09-11 (3) 11-15 (2) 15-17 (3) 17-00 (4)	00-02 (4) 02-03 (3) 03-04 (2) 04-06 (1) 21-00 (1)* 00-03 (2)* 03-05 (1)*
Peru, Bolivia, Paraguay, Brazil, Chile, Argentina & Uruguay	08-11 (1) 11-14 (2) 14-15 (3) 15-17 (4) 17-18 (3) 18-19 (2) 19-20 (1)	07-08 (1) 08-11 (2) 11-14 (1) 14-15 (2) 15-16 (3) 16-19 (4) 19-21 (3) 21-22 (2) 22-23 (1)	00-02 (3) 02-03 (2) 03-05 (1) 05-09 (2) 09-15 (1) 15-17 (2) 17-18 (3) 18-00 (4)	19-22 (1) 22-03 (2) 03-04 (1) 20-03 (1)*
McMurdo Sound, Antarctica	15-19 (1)	15-16 (1) 16-18 (2) 18-20 (3) 20-22 (2) 22-00 (1)	16-18 (1) 18-19 (2) 19-21 (3) 21-01 (4) 01-03 (3) 03-05 (2) 05-07 (1)	21-22 (1) 22-00 (2) 00-05 (1) 05-07 (2) 07-08 (1)

*Predicted times of 80 meter openings. Openings on 160 meters are also likely to occur during those times when 80 meter openings are shown with a forecast rating of (2), or higher. Six meter openings are likely to occur at times when 10 meter openings are shown with a propagation index of (4) and conditions are High Normal or better.3

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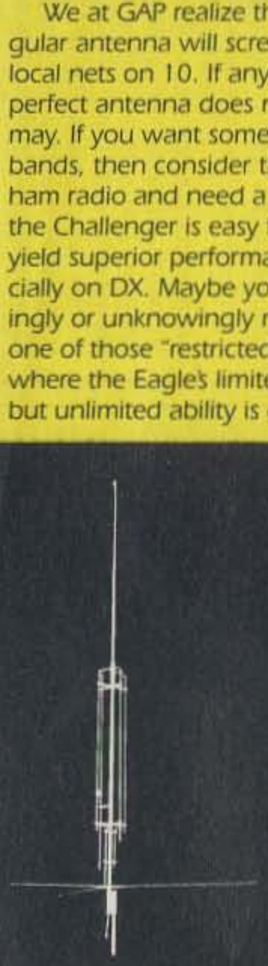

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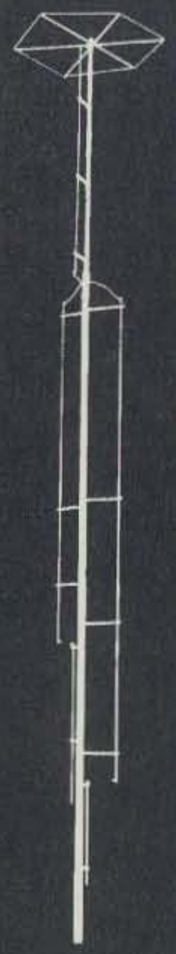

Voyager DX

This chart helps you select the right GAP antenna. When comparing GAPs, bandwidth is not a concern. With few exceptions, a GAP yields continuous coverage under 2:1 for the **ENTIRE BAND**.

All antennas utilize a GAP elevated asymmetric feed. A major benefit is the virtual elimination of the earth loss, so more RF radiates into the air instead of the ground. This feed is why a GAP requires **NO RADIALS**. Just as elevating a GAP offers no significant improvement to its performance, adding radials won't either, making set up a breeze.

A GAP antenna has no traps, coils or transformers. This is important. The greatest sources of failure in multiband antennas are these devices. Perhaps you heard someone discuss a trap that had melted, arced or became full of water. Improvements to these inherent problems are the focus of the antenna manufacturer, while the basic design of the antenna remains unchanged. **GAP improved the trap by eliminating it!** Removing these devices means they don't have to be tuned and, more importantly, won't be detuned by the first ice or rain. The absence of these devices improves antenna reliability, stability and increases bandwidth.

Another major advantage to a GAP antenna is its NO tune feature. Screws are simply inserted into predrilled holes with a supplied nutdriver.

The secret is out and people in the know say:

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73–"This is a real DX antenna, much quieter than other verticals."

RF–"To say this antenna is effective would be a real understatement. Switching back and forth on 40m between another multiband HF vertical and the GAP, there was no comparison. Signals were always stronger on the GAP, sometimes by S units, not just DB's."

Worldradio – "These guys have solved the problem associated with verticals. That is, an awful lot of RF is wallowing around and dropping into the dirt instead of going outward bound. A half-wave vertical does need radials if it is end fed (at the bottom). But the same half-wave vertical does not (as much, hardly at all) if is fed in the center."

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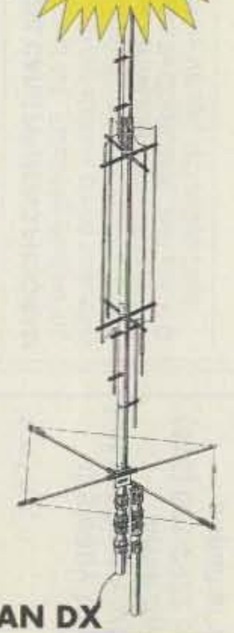

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Eagle DX			■	■	■	■	■		■			21.5'	19 lbs	1-1/4" pipe	80" Rigid	$289
Titan DX			■	■	■	■	■	■	■	■		25'	25 lbs	1-1/4" pipe	80" Rigid	$319
Voyager DX							■		■	■	■	45'	39 lbs	Hinged Base	3 Wires @ 57'	$399

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Power: ..... 5-100 Watts (2-40W, AM)
Power Supply Requirement: ... 13.8 V DC
Memory Channels: ..... 102 total, 99 regular, 2 scan edges, and 1 call
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